NACA TN No. 1592

1st Copy.

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

TECHNICAL NOTE

No. 1592

COMPRESSIBLE FLOW TABLES FOR AIR

By Marie A. Burcher

Langley Aeronautical Laboratory
Langley Field, Va.

Washington
August 1948

LIBRARY COPY

n 1993

LANGLEY RESEARCH CENTER
LIBRARY NASA
HAMPTON, VIRGINIA

3 1176 01433 9296

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

TECHNICAL NOTE NO. 1592

COMPRESSIBLE FLOW TABLES FOR AIR

By Marie A. Burcher

SUMMARY

A tabulation is presented of functions of the Mach number which are frequently used in high-speed aerodynamics. The tables include values of Mach number from 0 to 10.0 in increments of 0.01 and the functions are based on the assumption that air is a perfect gas having a specific-heat ratio of 1.400.

INTRODUCTION

In high-speed research, frequent use must be made of the theoretical relationships existing between the Mach number and various flow parameters, for example, the stream-tube area ratio, pressure, temperature, and density ratios referred to stagnation conditions, and the normal shock relations. The purpose of the tabulation is to present values of the most commonly needed functions for Mach number increments (0.01) small enough to provide for linear interpolation without loss of accuracy for the Mach number range from 0 to 10.0. The quantities shown are functions solely of the Mach number with the exception of a few dimensional quantities computed for specified stagnation conditions. Tables I and II cover the subsonic and supersonic Mach number ranges, respectively.

An earlier unpublished compressible flow table which has been in use at the Langley Laboratory of the National Advisory Committee for Aeronautics since 1945 was computed by Miss Vivian P. Adair of the Fluid and Gas Dynamics Analysis Section. The present tabulation extended this previous work from $M = 3.0$ to $M = 10.0$ and added a number of functions not included in the earlier table.

SYMBOLS

A sketch illustrating the notation adopted for the stream conditions in subsonic and supersonic flow is shown as figure 1.

A cross-sectional area of stream tube

A_{cr} cross-sectional area of stream tube for $M_1 = 1.0$

a speed of sound in air

F_c compressibility factor $\left(\frac{p_o - p_1}{q_1} = 1 + \frac{1}{4}M_1^2 + \frac{1}{40}M_1^4 + \frac{1}{1600}M_1^6 + \cdots\right)$

M Mach number (V/a)

μ Mach angle $\left(\sin^{-1}\frac{1}{M}\right)$

p absolute pressure, pounds per square foot

q dynamic pressure, pounds per square foot (computed for an arbitrary stagnation pressure, p_o = 2121 lb/sq ft) $\left(\frac{1}{2}\rho V^2\right)$

T temperature, $^\circ$F absolute

V airspeed computed for $T_o = 520^\circ$ F absolute, feet per second

β angle between oblique shock and flow direction behind shock (see fig. 2), degrees

γ ratio of specific heats, taken as 1.400

δ_{max} maximum possible flow-deflection angle (see fig. 2) for oblique shock, degrees

ϵ_{max} maximum acute angle between oblique shock and direction of undisturbed stream (see fig. 2), degrees

ν expansion angle required to change Mach number from 1.0 to M_1 (see fig. 3), degrees

ρ mass density of air at sea level

Subscripts:

o, 1, 2, 3, cr — Stations in assumed stream tube (fig. 1). For use of the tables in subsonic flight problems M_1 should be taken as the flight Mach number; then subscript 1 refers to atmospheric conditions and subscript o refers to stagnation conditions on the aircraft. Similarly, for supersonic flight problems M_1 is the flight Mach number, and subscripts o and 1 are, respectively, the ideal stagnation and the atmospheric conditions.

ACCURACY

The values given in the tables were computed individually. Most of the steps in the various calculations were carried to seven significant figures on computing machines. Over half of the values given have been checked by recalculation. The rest of the values were checked by an examination of the differences between readings. The values are believed to be correct to the number of places shown, with the possible exception of the values of δ_{max}, which may occasionally be in error by one point in the last place (0.01°).

DISCUSSION

The formulas used in calculating the tables are, in general, well-known and their derivation may be found in modern text books on fluid mechanics. A possible exception is the equation for δ_{max} which was first given in reference 1. For convenience, all the equations are listed in the appendix.

It has been found convenient to use the stream-tube notation shown in figure 1. The theoretical relations involved are, of course, equally applicable either to stream-tube problems such as those encountered in wind tunnels and internal-flow systems or to flight problems. Attention is called to the fact that the subscript o refers to the ideal stagnation conditions (stagnation conditions for isentropic deceleration to zero velocity). For subsonic-flight application, the stagnation conditions at an impact tube, for example, are represented by the subscript o. In the supersonic case, however, because of the presence of a normal compression shock ahead of the impact tube, the stagnation pressure shown by an impact tube will not correspond to the value represented by this subscript o but rather to that represented by the subscript 3, which refers to the stagnation condition behind a normal shock. The atmospheric conditions (p, T, and ρ) in the flight case are represented by the subscript 1.

The assumption that air is a perfect gas with a value of γ of 1.400 is valid for the conditions usually encountered in the subsonic and lower supersonic speed regions for normal stagnation conditions. For Mach numbers greater than about 4.0 or for unusual stagnation conditions, however, the behavior of air will depart appreciably from that of a perfect gas if the liquefaction condition is approached, and caution should be used in applying the results in the tables at the higher Mach numbers. The data of reference 2

afford a means of estimating the conditions under which the constituents of air will liquefy at the relatively low pressures usually encountered in supersonic aerodynamic problems.

Langley Aeronautical Laboratory
National Advisory Committee for Aeronautics
Langley Field, Va., January 8, 1948

APPENDIX

FORMULAS USED FOR CALCULATIONS

Subsonic Calculations

The significant Mach number functions for subsonic applications are given in the column headings of table I. The notation used is illustrated in figure 1(a). In flight applications, if M_1 is the flight Mach number, p_1 represents the atmospheric pressure and p_o the stagnation pressure indicated by an ideal pitot tube. Similarly, T_1 and ρ_1 are atmospheric temperature and density, respectively.

The following formulas, which are functions of M_1 and γ, require no discussion:

$$\frac{p_1}{p_o} = \left(1 + \frac{\gamma - 1}{2} M_1^2\right)^{\frac{\gamma}{1-\gamma}}$$

$$\frac{\rho_1}{\rho_o} = \left(1 + \frac{\gamma - 1}{2} M_1^2\right)^{\frac{1}{1-\gamma}}$$

$$\frac{T_1}{T_o} = \left(1 + \frac{\gamma - 1}{2} M_1^2\right)^{-1}$$

$$\frac{A_{cr}}{A_1} = M_1 \left(\frac{1 + \frac{\gamma - 1}{2}}{1 + \frac{\gamma - 1}{2} M_1^2}\right)^{\frac{\gamma+1}{2(\gamma-1)}}$$

$$\frac{a_1}{a_o} = \left(1 + \frac{\gamma - 1}{2} M_1^2\right)^{-\frac{1}{2}}$$

The values of V_1 presented in table I are based on a stagnation temperature $T_o = 520^\circ$ F absolute. The formula is

$$V_1 = M_1\left(\frac{a_1}{a_o}\right)a_o$$

The value of a_o for $T_o = 520^\circ$ F absolute was taken as 1117.372 feet per second.

The values of q_1 were obtained from the formula

$$q_1 = \frac{\gamma}{2}M_1^2 p_o\left(\frac{p_1}{p_o}\right)$$

$$= 1484.7M_1^2\left(\frac{p_1}{p_o}\right)$$

where p_o was arbitrarily taken as 2121 pounds per square foot. The dynamic pressure for any other p_o (regardless of the value of T_o) can consequently be obtained by multiplying the tabulated values by the ratio $p_o/2121$.

The general formula for the compressibility factor is

$$F_c = \frac{p_o - p_1}{\frac{1}{2}\rho_1 V_1^2}$$

For small values of M_1, F_c was computed from

$$F_c = 1 + \frac{1}{4}M_1^2 + \frac{1}{40}M_1^4 + \frac{1}{1600}M_1^6$$

Supersonic Calculations

The functions pertinent to problems involving supersonic flow are shown in the column headings of table II. The stream-tube notations applicable to this case are illustrated in figure 1(b). The formulas for p_1/p_o, ρ_1/ρ_o, T_1/T_o, a_1/a_o, V_1, and q_1 are the same for supersonic calculations as for subsonic calculations. The value of p_o was taken as 2121 pounds per square foot and the value of a_o for $T_o = 520°$ F absolute was taken as 1117.372 feet per second. Formulas having especial significance in supersonics, however, are

$$\frac{A_1}{A_{cr}} = \frac{1}{M_1}\left(\frac{1 + \frac{\gamma - 1}{2}M_1^2}{1 + \frac{\gamma - 1}{2}}\right)^{\frac{\gamma+1}{2(\gamma-1)}}$$

$$\frac{q_1}{q_{cr}} = M_1^2\left(\frac{T_1}{T_{cr}}\right)\left(\frac{\rho_1}{\rho_o}\right)\left(\frac{\rho_o}{\rho_{cr}}\right)_{(M_1=1.0)}$$

$$\mu = \sin^{-1}\left(\frac{1}{M_1}\right)$$

$$\nu = \left(\frac{\gamma + 1}{\gamma - 1}\right)^{1/2} \cos^{-1}\left[\frac{\gamma + 1}{2\left(1 + \frac{\gamma - 1}{2}M_1^2\right)}\right]^{1/2} + \mu - 90°$$

$$\delta_{max} = \epsilon_{max} - \beta$$

where

$$\epsilon_{max} = \sin^{-1}\sqrt{\frac{1}{\gamma M_1^2}\left[\frac{\gamma + 1}{4}M_1^2 - 1 + \sqrt{(\gamma + 1)\left(1 + \frac{\gamma - 1}{2}M_1^2 + \frac{\gamma + 1}{16}M_1^4\right)}\right]}$$

$$\beta = \tan^{-1}\left[\frac{2}{\gamma + 1}\left(\frac{1}{M_1^2 \sin^2\epsilon_{max}} + \frac{\gamma - 1}{2}\right)\tan \epsilon_{max}\right]$$

$$\frac{p_2}{p_1} = \frac{2\gamma}{\gamma + 1}M_1^2 - \frac{\gamma - 1}{\gamma + 1}$$

$$\frac{p_2}{p_o} = \left(\frac{p_2}{p_1}\right)\left(\frac{p_1}{p_o}\right)$$

$$\frac{p_3}{p_2} = \left(\frac{\gamma - 1}{2}M_2^2 + 1\right)^{\frac{\gamma}{\gamma-1}}$$

$$\frac{p_3}{p_o} = \left(\frac{p_2}{p_o}\right)\left(\frac{p_3}{p_2}\right)$$

$$M_2 = \sqrt{\left(\frac{\gamma + 1}{2\gamma}\right)^2\left(\frac{1}{M_1^2 - \frac{\gamma - 1}{2\gamma}}\right) + \frac{\gamma - 1}{2\gamma}}$$

$$\frac{\rho_2}{\rho_1} = \left(\frac{M_1}{M_2}\right)^2\left(\frac{p_1}{p_2}\right)$$

$$\frac{V_2}{V_1} = \frac{\rho_1}{\rho_2}$$

REFERENCES

1. Crocco, Luigi: Singolarità della corrente gassosa imperacustica nell'intorno di una prora a diedro. L'Aerotecnica, vol. XVII, fasc. 6, June 1937, pp. 519-534.

2. Dodge, Barnett F., and Dunbar, Atherton K.: An Investigation of the Coexisting Liquid and Vapor Phases of Solutions of Oxygen and Nitrogen. Jour. Amer. Chem. Society, vol. 49, no. 3, 1927, pp. 591-610.

TABLE I.- SUBSONIC FLOW

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_{or}}{A_1}$	$\frac{a_1}{a_o}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	F_c	$\frac{1}{\sqrt{1-M_1^2}}$
0	1.000	1.000	1.000	0	1.000	0	0	1.000	1.000
.01	.9999	.9999	1.000	.0173	1.000	11.17	.1484	1.000	1.000
.02	.9997	.9998	.9999	.0346	1.000	22.35	.5936	1.000	1.000
.03	.9994	.9995	.9998	.0518	.9999	33.52	1.335	1.000	1.000
.04	.9989	.9992	.9997	.0691	.9998	44.69	2.373	1.000	1.001
.05	.9983	.9988	.9995	.0863	.9998	55.85	3.705	1.001	1.001
.06	.9975	.9982	.9993	.1035	.9996	67.02	5.331	1.001	1.002
.07	.9966	.9976	.9990	.1206	.9995	78.18	7.249	1.001	1.002
.08	.9955	.9968	.9987	.1377	.9994	89.33	9.458	1.002	1.003
.09	.9944	.9960	.9984	.1548	.9992	100.5	11.96	1.002	1.004
.10	.9930	.9950	.9980	.1718	.9990	111.6	14.74	1.003	1.005
.11	.9916	.9940	.9976	.1887	.9988	122.8	17.81	1.003	1.006
.12	.9900	.9928	.9971	.2056	.9986	133.9	21.16	1.004	1.007
.13	.9883	.9916	.9966	.2224	.9983	145.0	24.79	1.004	1.009
.14	.9864	.9903	.9961	.2391	.9980	156.1	28.70	1.005	1.010
.15	.9844	.9888	.9955	.2557	.9978	167.2	32.88	1.006	1.011
.16	.9823	.9873	.9949	.2723	.9974	178.3	37.33	1.006	1.013
.17	.9800	.9857	.9943	.2887	.9971	189.4	42.05	1.007	1.015
.18	.9776	.9840	.9936	.3051	.9968	200.5	47.02	1.008	1.017
.19	.9751	.9822	.9928	.3213	.9964	211.5	52.26	1.009	1.019
.20	.9725	.9803	.9921	.3374	.9960	222.6	57.75	1.010	1.021
.21	.9697	.9783	.9913	.3534	.9956	233.6	63.48	1.011	1.023
.22	.9668	.9762	.9904	.3693	.9952	244.6	69.47	1.012	1.025
.23	.9638	.9740	.9895	.3851	.9948	255.6	75.69	1.013	1.028
.24	.9607	.9718	.9886	.4007	.9943	266.6	82.15	1.014	1.030
.25	.9575	.9694	.9877	.4162	.9938	277.6	88.83	1.016	1.033
.26	.9541	.9670	.9867	.4315	.9933	288.6	95.74	1.017	1.036
.27	.9506	.9645	.9856	.4468	.9928	299.5	102.9	1.018	1.039
.28	.9470	.9619	.9846	.4618	.9923	310.4	110.2	1.020	1.042
.29	.9433	.9592	.9835	.4767	.9917	321.3	117.8	1.021	1.045
.30	.9395	.9564	.9823	.4914	.9911	332.2	125.5	1.023	1.048
.31	.9355	.9535	.9811	.5059	.9905	343.1	133.5	1.024	1.052
.32	.9315	.9506	.9799	.5203	.9899	354.0	141.6	1.026	1.056
.33	.9274	.9476	.9787	.5345	.9893	364.8	149.9	1.028	1.059
.34	.9231	.9445	.9774	.5486	.9886	375.6	158.4	1.029	1.063
.35	.9188	.9413	.9761	.5624	.9880	386.4	167.1	1.031	1.068
.36	.9143	.9380	.9747	.5761	.9873	397.1	175.9	1.033	1.072
.37	.9098	.9347	.9733	.5896	.9866	407.9	184.9	1.035	1.076
.38	.9052	.9313	.9719	.6029	.9859	418.6	194.0	1.037	1.081
.39	.9004	.9278	.9705	.6159	.9851	429.3	203.3	1.039	1.086
.40	.8956	.9243	.9690	.6288	.9844	440.0	212.7	1.041	1.091
.41	.8907	.9207	.9675	.6415	.9836	450.6	222.3	1.043	1.096
.42	.8857	.9170	.9659	.6541	.9828	461.2	231.9	1.045	1.102
.43	.8807	.9132	.9643	.6664	.9820	471.8	241.7	1.047	1.108
.44	.8755	.9094	.9627	.6784	.9812	482.4	251.6	1.049	1.114
.45	.8703	.9055	.9611	.6903	.9803	492.9	261.6	1.052	1.120
.46	.8650	.9016	.9594	.7019	.9795	503.4	271.7	1.054	1.126
.47	.8596	.8976	.9577	.7134	.9786	513.9	281.9	1.056	1.133
.48	.8541	.8935	.9559	.7246	.9777	524.4	292.1	1.059	1.140
.49	.8486	.8894	.9542	.7356	.9768	534.8	302.5	1.061	1.147

TABLE I.— SUBSONIC FLOW — Concluded

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_{cr}}{A_1}$	$\frac{a_1}{a_o}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	F_c	$\frac{1}{\sqrt{1-M_1^2}}$
0.50	0.8430	0.8852	0.9524	0.7464	0.9759	545.2	312.9	1.064	1.155
.51	.8374	.8809	.9506	.7569	.9750	555.6	323.3	1.067	1.163
.52	.8317	.8766	.9487	.7672	.9740	565.9	333.8	1.069	1.171
.53	.8259	.8723	.9468	.7773	.9730	576.2	344.4	1.072	1.179
.54	.8201	.8679	.9449	.7872	.9721	586.5	355.0	1.075	1.188
.55	.8142	.8634	.9430	.7969	.9711	596.8	365.6	1.078	1.197
.56	.8082	.8589	.9410	.8063	.9700	607.0	376.3	1.081	1.207
.57	.8022	.8544	.9390	.8155	.9690	617.2	386.9	1.084	1.217
.58	.7962	.8498	.9370	.8244	.9680	627.3	397.6	1.087	1.228
.59	.7901	.8451	.9349	.8331	.9669	637.4	408.3	1.090	1.239
.60	.7840	.8405	.9328	.8416	.9658	647.5	419.0	1.093	1.250
.61	.7778	.8357	.9307	.8499	.9647	657.6	429.7	1.097	1.262
.62	.7716	.8310	.9286	.8579	.9636	667.6	440.3	1.100	1.275
.63	.7654	.8262	.9265	.8657	.9625	677.6	451.0	1.103	1.288
.64	.7591	.8213	.9243	.8733	.9614	687.5	461.6	1.107	1.301
.65	.7528	.8164	.9221	.8806	.9603	697.4	472.2	1.110	1.316
.66	.7465	.8115	.9199	.8877	.9591	707.3	482.7	1.114	1.331
.67	.7401	.8066	.9176	.8945	.9579	717.1	493.2	1.117	1.347
.68	.7338	.8016	.9153	.9011	.9567	726.9	503.7	1.121	1.364
.69	.7274	.7966	.9131	.9076	.9555	736.7	514.1	1.125	1.382
.70	.7209	.7916	.9107	.9138	.9543	746.4	524.4	1.129	1.400
.71	.7145	.7865	.9084	.9197	.9531	756.1	534.7	1.132	1.420
.72	.7080	.7814	.9061	.9255	.9519	765.8	544.9	1.136	1.441
.73	.7016	.7763	.9037	.9309	.9506	775.4	555.0	1.140	1.463
.74	.6951	.7712	.9013	.9362	.9494	785.0	565.0	1.144	1.487
.75	.6886	.7660	.8989	.9413	.9481	794.5	575.0	1.149	1.512
.76	.6821	.7609	.8964	.9461	.9468	804.0	584.8	1.153	1.539
.77	.6756	.7557	.8940	.9507	.9455	813.5	594.6	1.157	1.567
.78	.6691	.7505	.8915	.9551	.9442	822.9	604.3	1.161	1.598
.79	.6625	.7452	.8890	.9592	.9429	832.3	613.8	1.166	1.631
.80	.6560	.7400	.8865	.9632	.9416	841.7	623.3	1.170	1.667
.81	.6495	.7347	.8840	.9669	.9402	851.0	632.6	1.175	1.705
.82	.6430	.7295	.8815	.9704	.9389	860.2	641.8	1.180	1.747
.83	.6365	.7242	.8789	.9737	.9375	869.5	650.9	1.184	1.793
.84	.6300	.7189	.8763	.9769	.9361	878.6	659.9	1.189	1.843
.85	.6235	.7136	.8737	.9797	.9347	887.8	668.7	1.194	1.898
.86	.6170	.7083	.8711	.9824	.9333	896.9	677.5	1.199	1.960
.87	.6106	.7030	.8685	.9849	.9319	906.0	686.0	1.204	2.028
.88	.6041	.6977	.8659	.9872	.9305	915.0	694.5	1.209	2.105
.89	.5977	.6924	.8632	.9893	.9291	924.0	702.8	1.214	2.193
.90	.5913	.6870	.8606	.9912	.9277	932.9	711.0	1.219	2.294
.91	.5849	.6817	.8579	.9929	.9262	941.8	719.0	1.225	2.412
.92	.5785	.6764	.8552	.9944	.9248	950.7	726.8	1.230	2.552
.93	.5721	.6711	.8525	.9958	.9233	959.5	734.6	1.235	2.721
.94	.5658	.6658	.8498	.9969	.9219	968.3	742.1	1.241	2.931
.95	.5595	.6604	.8471	.9979	.9204	977.0	749.5	1.246	3.203
.96	.5532	.6551	.8444	.9987	.9189	985.7	756.8	1.252	3.571
.97	.5469	.6498	.8416	.9992	.9174	994.3	763.9	1.258	4.113
.98	.5407	.6445	.8389	.9997	.9159	1003.	770.8	1.264	5.025
.99	.5345	.6392	.8361	.9999	.9144	1011	777.6	1.270	7.089
1.00	.5283	.6339	.8333	1.0000	.9129	1020	784.2	1.276	∞

NACA

TABLE II.- SUPERSONIC FLOW

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2 - 1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
1.00	0.5283	0.6339	0.8333	1.000	0.9129	1.000	1020	784.2	∞	90.00	0	0	1.000	0.5283	1.000	1.000	1.000	1.000
1.01	.5221	.6287	.8306	1.000	.9113	1.008	1028	790.7	7.053	81.93	.04	.05	1.023	.5344	1.000	1.017	.9901	.9836
1.02	.5160	.6234	.8278	1.000	.9098	1.016	1037	797.0	4.975	78.64	.13	.14	1.047	.5403	1.000	1.033	.9805	.9676
1.03	.5098	.6181	.8250	1.001	.9083	1.024	1045	803.1	4.052	76.14	.23	.26	1.071	.5462	1.000	1.050	.9712	.9522
1.04	.5039	.6129	.8222	1.001	.9067	1.032	1054	809.1	3.501	74.06	.35	.40	1.095	.5519	.9999	1.067	.9620	.9371
1.05	.4979	.6077	.8193	1.002	.9052	1.039	1062	814.8	3.123	72.25	.49	.56	1.120	.5574	.9999	1.084	.9531	.9225
1.06	.4919	.6024	.8165	1.003	.9036	1.046	1070	820.5	2.844	70.63	.64	.73	1.144	.5628	.9997	1.101	.9444	.9083
1.07	.4860	.5972	.8137	1.004	.9020	1.053	1078	825.9	2.627	69.16	.80	.91	1.169	.5681	.9996	1.118	.9360	.8945
1.08	.4800	.5920	.8108	1.005	.9005	1.060	1087	831.2	2.451	67.81	.97	1.10	1.194	.5732	.9994	1.135	.9277	.8811
1.09	.4742	.5869	.8080	1.006	.8989	1.066	1095	836.3	2.306	66.55	1.15	1.30	1.219	.5782	.9992	1.152	.9196	.8681
1.10	.4684	.5817	.8052	1.008	.8973	1.073	1103	843.3	2.182	65.38	1.34	1.50	1.245	.5831	.9989	1.169	.9118	.8554
1.11	.4626	.5766	.8023	1.010	.8957	1.079	1111	846.1	2.076	64.28	1.53	1.73	1.271	.5878	.9986	1.186	.9041	.8430
1.12	.4568	.5714	.7994	1.011	.8941	1.085	1119	850.7	1.983	63.23	1.74	1.96	1.297	.5924	.9982	1.203	.8966	.8310
1.13	.4511	.5663	.7966	1.013	.8925	1.090	1127	855.1	1.900	62.25	1.94	2.19	1.323	.5968	.9978	1.221	.8892	.8193
1.14	.4455	.5612	.7937	1.015	.8909	1.096	1135	859.4	1.827	61.32	2.16	2.43	1.350	.6010	.9973	1.238	.8820	.8079
1.15	.4398	.5562	.7908	1.017	.8893	1.101	1143	863.5	1.761	60.41	2.38	2.67	1.376	.6053	.9967	1.255	.8750	.7968
1.16	.4343	.5511	.7879	1.020	.8877	1.106	1151	867.4	1.701	59.55	2.61	2.92	1.403	.6093	.9961	1.272	.8682	.7860
1.17	.4287	.5461	.7851	1.022	.8860	1.111	1158	871.2	1.646	58.73	2.84	3.17	1.430	.6132	.9953	1.290	.8615	.7754
1.18	.4232	.5411	.7822	1.025	.8844	1.116	1166	874.8	1.596	57.94	3.07	3.42	1.458	.6170	.9946	1.307	.8549	.7652
1.19	.4178	.5361	.7793	1.026	.8828	1.120	1174	878.2	1.550	57.18	3.31	3.68	1.485	.6206	.9937	1.324	.8485	.7551
1.20	.4124	.5311	.7764	1.030	.8811	1.124	1181	881.5	1.508	56.44	3.56	3.94	1.513	.6241	.9928	1.342	.8422	.7454
1.21	.4070	.5262	.7735	1.033	.8795	1.128	1189	884.6	1.468	55.74	3.81	4.21	1.541	.6274	.9918	1.359	.8360	.7358
1.22	.4017	.5213	.7706	1.037	.8778	1.132	1197	887.6	1.431	55.05	4.06	4.47	1.570	.6306	.9907	1.376	.8300	.7266
1.23	.3964	.5164	.7677	1.040	.8762	1.135	1204	890.4	1.396	54.39	4.31	4.74	1.598	.6337	.9896	1.394	.8241	.7175
1.24	.3912	.5115	.7648	1.043	.8745	1.139	1212	893.0	1.364	53.75	4.57	5.01	1.627	.6366	.9884	1.411	.8183	.7086
1.25	.3861	.5067	.7619	1.047	.8729	1.142	1219	895.5	1.333	53.13	4.83	5.29	1.656	.6394	.9871	1.429	.8126	.7000
1.26	.3809	.5019	.7590	1.050	.8712	1.145	1227	897.8	1.305	52.53	5.09	5.56	1.686	.6421	.9857	1.446	.8071	.6916
1.27	.3758	.4971	.7561	1.054	.8695	1.148	1234	899.9	1.277	51.94	5.36	5.83	1.715	.6446	.9842	1.463	.8016	.6833
1.28	.3708	.4923	.7532	1.058	.8679	1.150	1241	901.9	1.252	51.38	5.63	6.11	1.745	.6470	.9827	1.481	.7963	.6753
1.29	.3658	.4876	.7503	1.062	.8662	1.152	1249	903.8	1.227	50.82	5.90	6.39	1.775	.6493	.9811	1.498	.7911	.6674
1.30	.3609	.4829	.7474	1.066	.8645	1.155	1256	905.5	1.204	50.28	6.17	6.66	1.805	.6514	.9794	1.516	.7860	.6598
1.31	.3560	.4782	.7445	1.071	.8628	1.157	1263	907.0	1.182	49.76	6.44	6.94	1.835	.6535	.9776	1.533	.7809	.6523
1.32	.3512	.4736	.7416	1.075	.8611	1.158	1270	908.4	1.161	49.25	6.72	7.22	1.866	.6554	.9758	1.551	.7760	.6449
1.33	.3464	.4690	.7387	1.080	.8593	1.160	1277	909.6	1.140	48.75	7.00	7.49	1.897	.6571	.9738	1.568	.7712	.6378
1.34	.3417	.4644	.7358	1.084	.8576	1.161	1284	910.7	1.121	48.27	7.28	7.77	1.928	.6588	.9718	1.585	.7664	.6308
1.35	.3370	.4598	.7329	1.089	.8561	1.163	1291	911.7	1.103	47.79	7.56	8.05	1.960	.6603	.9697	1.603	.7618	.6239
1.36	.3323	.4553	.7300	1.094	.8544	1.164	1298	912.5	1.085	47.33	7.84	8.33	1.991	.6617	.9676	1.620	.7572	.6172
1.37	.3277	.4508	.7271	1.099	.8527	1.164	1305	913.1	1.068	46.88	8.13	8.60	2.023	.6630	.9653	1.638	.7527	.6107
1.38	.3232	.4463	.7242	1.104	.8510	1.165	1312	913.7	1.052	46.44	8.41	8.88	2.055	.6642	.9630	1.655	.7483	.6043
1.39	.3187	.4418	.7213	1.109	.8493	1.166	1319	914.1	1.036	46.01	8.70	9.15	2.087	.6652	.9607	1.672	.7440	.5980
1.40	.3142	.4374	.7184	1.115	.8476	1.166	1326	914.3	1.021	45.58	8.99	9.43	2.120	.6662	.9582	1.690	.7397	.5918
1.41	.3098	.4330	.7155	1.120	.8459	1.166	1333	914.4	1.006	45.17	9.28	9.70	2.153	.6670	.9557	1.707	.7355	.5858
1.42	.3055	.4287	.7126	1.126	.8442	1.166	1339	914.4	.9916	44.77	9.57	9.97	2.186	.6677	.9531	1.724	.7314	.5799
1.43	.3012	.4244	.7097	1.132	.8425	1.166	1346	914.3	.9788	44.37	9.86	10.25	2.219	.6683	.9504	1.742	.7274	.5742
1.44	.2969	.4201	.7069	1.138	.8407	1.165	1351	914.0	.9661	43.98	10.15	10.52	2.253	.6688	.9476	1.759	.7235	.5685

NACA

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_0}$	$\frac{\rho_1}{\rho_0}$	$\frac{T_1}{T_0}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_0}$	$\frac{q_1}{q_{cr}}$	V_1 (T_0=520°F abs.)	q_1 (p_0 = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2 - 1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_0}$	$\frac{p_3}{p_0}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
1.45	0.2927	0.4158	0.7040	1.144	0.8390	1.165	1359	913.6	0.9524	43.60	10.44	10.79	2.286	0.6692	0.9448	1.776	0.7196	0.5630
1.46	.2886	.4116	.7011	1.150	.8373	1.164	1366	913.1	.9401	43.23	10.73	11.05	2.320	.6695	.9420	1.793	.7157	.5576
1.47	.2845	.4074	.6982	1.156	.8356	1.164	1373	912.5	.9281	42.86	11.02	11.32	2.354	.6697	.9390	1.811	.7120	.5523
1.48	.2804	.4032	.6954	1.163	.8339	1.163	1379	911.7	.9165	42.51	11.32	11.59	2.389	.6698	.9360	1.828	.7083	.5471
1.49	.2764	.3991	.6925	1.169	.8322	1.161	1385	910.8	.9053	42.16	11.61	11.85	2.423	.6698	.9329	1.845	.7047	.5420
1.50	.2724	.3950	.6897	1.176	.8305	1.160	1392	909.9	.8944	41.81	11.91	12.11	2.458	.6697	.9298	1.862	.7011	.5370
1.51	.2685	.3909	.6868	1.183	.8287	1.159	1398	908.8	.8838	41.47	12.20	12.37	2.493	.6694	.9266	1.879	.6976	.5321
1.52	.2646	.3869	.6840	1.190	.8270	1.157	1405	907.5	.8736	41.14	12.49	12.63	2.529	.6691	.9233	1.896	.6941	.5274
1.53	.2608	.3829	.6811	1.197	.8253	1.156	1411	906.2	.8636	40.81	12.79	12.89	2.564	.6687	.9200	1.913	.6907	.5227
1.54	.2570	.3789	.6783	1.204	.8236	1.154	1417	904.8	.8539	40.49	13.09	13.15	2.600	.6682	.9166	1.930	.6874	.5180
1.55	.2533	.3750	.6754	1.212	.8219	1.152	1423	903.3	.8444	40.18	13.38	13.40	2.636	.6677	.9132	1.947	.6841	.5135
1.56	.2496	.3710	.6726	1.219	.8201	1.150	1430	901.6	.8352	39.87	13.68	13.66	2.673	.6670	.9097	1.964	.6809	.5091
1.57	.2459	.3672	.6698	1.227	.8184	1.147	1436	899.9	.8262	39.56	13.97	13.91	2.709	.6662	.9061	1.981	.6777	.5047
1.58	.2423	.3633	.6670	1.234	.8167	1.145	1442	898.1	.8175	39.27	14.27	14.16	2.746	.6654	.9026	1.998	.6746	.5005
1.59	.2388	.3595	.6642	1.242	.8150	1.143	1448	896.1	.8090	38.97	14.56	14.41	2.783	.6645	.8989	2.015	.6715	.4963
1.60	.2353	.3557	.6614	1.250	.8133	1.140	1454	894.1	.8006	38.68	14.86	14.65	2.820	.6635	.8952	2.032	.6684	.4922
1.61	.2318	.3520	.6586	1.258	.8115	1.137	1460	892.0	.7925	38.40	15.16	14.90	2.857	.6624	.8915	2.049	.6655	.4882
1.62	.2284	.3483	.6558	1.267	.8098	1.135	1466	889.8	.7846	38.12	15.45	15.14	2.895	.6612	.8877	2.065	.6625	.4842
1.63	.2250	.3446	.6530	1.275	.8081	1.132	1472	887.5	.7769	37.84	15.75	15.38	2.933	.6600	.8838	2.082	.6596	.4803
1.64	.2217	.3409	.6502	1.284	.8064	1.129	1478	885.1	.7693	37.57	16.04	15.62	2.971	.6587	.8799	2.099	.6568	.4765
1.65	.2184	.3373	.6475	1.292	.8046	1.125	1484	882.6	.7619	37.31	16.34	15.86	3.010	.6573	.8760	2.115	.6540	.4728
1.66	.2151	.3337	.6447	1.301	.8029	1.122	1489	880.1	.7547	37.04	16.63	16.09	3.048	.6558	.8720	2.132	.6512	.4691
1.67	.2119	.3302	.6419	1.310	.8012	1.119	1495	877.5	.7477	36.78	16.93	16.32	3.087	.6543	.8680	2.148	.6485	.4655
1.68	.2088	.3266	.6392	1.319	.7995	1.115	1501	874.8	.7408	36.53	17.22	16.55	3.126	.6527	.8640	2.165	.6458	.4619
1.69	.2057	.3232	.6364	1.328	.7978	1.112	1506	872.0	.7340	36.28	17.52	16.78	3.165	.6510	.8598	2.181	.6431	.4584
1.70	.2026	.3197	.6337	1.338	.7961	1.108	1512	869.2	.7274	36.03	17.81	17.01	3.205	.6493	.8557	2.198	.6405	.4550
1.71	.1996	.3163	.6310	1.347	.7943	1.105	1518	866.2	.7209	35.79	18.10	17.24	3.245	.6475	.8516	2.214	.6380	.4517
1.72	.1966	.3129	.6283	1.357	.7926	1.101	1523	863.3	.7146	35.55	18.40	17.46	3.285	.6457	.8474	2.230	.6355	.4484
1.73	.1936	.3095	.6256	1.367	.7909	1.097	1529	860.2	.7084	35.31	18.69	17.68	3.325	.6438	.8431	2.247	.6330	.4451
1.74	.1907	.3062	.6229	1.376	.7892	1.093	1534	857.1	.7023	35.08	18.98	17.90	3.366	.6418	.8389	2.263	.6305	.4419
1.75	.1878	.3029	.6202	1.386	.7875	1.089	1540	853.9	.6963	34.85	19.27	18.12	3.406	.6398	.8346	2.279	.6281	.4388
1.76	.1850	.2996	.6175	1.397	.7858	1.085	1545	850.6	.6905	34.62	19.56	18.34	3.447	.6377	.8302	2.295	.6257	.4357
1.77	.1822	.2964	.6148	1.407	.7841	1.080	1551	847.3	.6847	34.40	19.86	18.55	3.488	.6356	.8259	2.311	.6234	.4327
1.78	.1794	.2931	.6121	1.418	.7824	1.076	1556	844.0	.6791	34.18	20.15	18.76	3.530	.6334	.8215	2.327	.6210	.4297
1.79	.1767	.2900	.6095	1.428	.7807	1.072	1561	840.6	.6736	33.96	20.44	18.97	3.571	.6311	.8171	2.343	.6188	.4268
1.80	.1740	.2868	.6068	1.439	.7790	1.067	1567	837.1	.6682	33.75	20.73	19.18	3.613	.6289	.8127	2.359	.6165	.4239
1.81	.1714	.2837	.6041	1.450	.7773	1.063	1572	833.6	.6628	33.54	21.01	19.39	3.655	.6265	.8082	2.375	.6143	.4210
1.82	.1688	.2806	.6015	1.461	.7756	1.058	1577	830.0	.6576	33.33	21.30	19.59	3.698	.6242	.8038	2.391	.6121	.4182
1.83	.1662	.2776	.5989	1.472	.7739	1.054	1582	826.4	.6525	33.12	21.59	19.80	3.740	.6217	.7993	2.407	.6099	.4155
1.84	.1637	.2745	.5963	1.484	.7722	1.049	1588	822.7	.6474	32.92	21.88	20.00	3.783	.6193	.7948	2.422	.6078	.4128
1.85	.1612	.2715	.5936	1.495	.7705	1.044	1593	819.0	.6425	32.72	22.16	20.20	3.826	.6168	.7902	2.438	.6057	.4102
1.86	.1587	.2686	.5910	1.507	.7688	1.040	1598	815.2	.6376	32.52	22.45	20.40	3.870	.6142	.7857	2.454	.6036	.4075
1.87	.1563	.2656	.5884	1.519	.7671	1.035	1603	811.4	.6328	32.33	22.73	20.59	3.913	.6116	.7811	2.469	.6016	.4050
1.88	.1539	.2627	.5859	1.531	.7654	1.030	1608	807.6	.6281	32.13	23.02	20.78	3.957	.6090	.7765	2.485	.5996	.4024
1.89	.1516	.2598	.5833	1.543	.7637	1.025	1613	803.7	.6235	31.94	23.30	20.98	4.001	.6064	.7720	2.500	.5976	.4000

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	θ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
1.90	0.1492	0.2570	0.5807	1.555	0.7620	1.020	1618	799.8	0.6190	31.76	23.59	21.17	4.045	0.6037	0.7674	2.516	0.5956	0.3975
1.91	.1470	.2542	.5782	1.548	.7604	1.015	1623	795.8	.6145	31.57	23.87	21.36	4.089	.6009	.7627	2.531	.5937	.3951
1.92	.1447	.2514	.5756	1.580	.7587	1.010	1628	791.8	.6101	31.39	24.15	21.54	4.134	.5982	.7581	2.546	.5918	.3927
1.93	.1425	.2486	.5731	1.593	.7570	1.005	1633	787.8	.6058	31.21	24.43	21.73	4.179	.5954	.7535	2.562	.5899	.3904
1.94	.1403	.2459	.5705	1.606	.7553	.9994	1637	783.8	.6015	31.03	24.71	21.91	4.224	.5926	.7488	2.577	.5880	.3881
1.95	.1381	.2432	.5680	1.619	.7537	.9942	1642	779.7	.5973	30.85	24.99	22.09	4.270	.5897	.7442	2.592	.5862	.3858
1.96	.1360	.2405	.5655	1.633	.7520	.9890	1647	775.6	.5932	30.68	25.27	22.27	4.315	.5869	.7395	2.607	.5844	.3836
1.97	.1339	.2378	.5630	1.646	.7503	.9837	1652	771.4	.5892	30.51	25.55	22.45	4.361	.5840	.7349	2.622	.5826	.3814
1.98	.1318	.2352	.5605	1.660	.7487	.9784	1656	767.3	.5852	30.33	25.83	22.63	4.407	.5810	.7302	2.637	.5808	.3792
1.99	.1298	.2326	.5580	1.674	.7470	.9731	1661	763.1	.5812	30.17	26.10	22.80	4.453	.5781	.7255	2.652	.5791	.3771
2.00	.1278	.2300	.5556	1.688	.7454	.9677	1666	758.9	.5774	30.00	26.38	22.97	4.500	.5751	.7209	2.667	.5774	.3750
2.01	.1258	.2275	.5531	1.702	.7437	.9623	1670	754.7	.5735	29.84	26.66	23.14	4.547	.5721	.7162	2.681	.5757	.3729
2.02	.1239	.2250	.5506	1.716	.7420	.9569	1675	750.4	.5698	29.67	26.93	23.31	4.594	.5691	.7115	2.696	.5740	.3709
2.03	.1220	.2225	.5482	1.730	.7404	.9515	1679	746.2	.5661	29.51	27.20	23.48	4.641	.5661	.7069	2.711	.5723	.3689
2.04	.1201	.2200	.5458	1.745	.7388	.9460	1684	741.9	.5624	29.35	27.48	23.65	4.689	.5630	.7022	2.725	.5707	.3669
2.05	.1182	.2176	.5433	1.760	.7371	.9405	1688	737.6	.5588	29.20	27.75	23.81	4.736	.5600	.6975	2.740	.5691	.3650
2.06	.1164	.2152	.5409	1.775	.7355	.9350	1693	733.3	.5552	29.04	28.02	23.98	4.784	.5569	.6928	2.755	.5675	.3630
2.07	.1146	.2128	.5385	1.790	.7338	.9295	1697	728.9	.5517	28.89	28.29	24.14	4.832	.5538	.6882	2.769	.5659	.3611
2.08	.1128	.2104	.5361	1.806	.7322	.9240	1702	724.6	.5483	28.74	28.56	24.30	4.881	.5507	.6835	2.783	.5643	.3593
2.09	.1111	.2081	.5337	1.821	.7306	.9184	1706	720.3	.5449	28.59	28.83	24.46	4.929	.5475	.6789	2.798	.5628	.3574
2.10	.1094	.2058	.5313	1.837	.7289	.9129	1710	715.9	.5415	28.44	29.10	24.61	4.978	.5444	.6742	2.812	.5613	.3556
2.11	.1077	.2035	.5290	1.853	.7273	.9073	1715	711.5	.5382	28.29	29.36	24.77	5.027	.5412	.6696	2.826	.5598	.3538
2.12	.1060	.2013	.5266	1.869	.7257	.9017	1719	707.1	.5350	28.14	29.63	24.92	5.077	.5381	.6649	2.840	.5583	.3521
2.13	.1043	.1990	.5243	1.885	.7241	.8961	1723	702.8	.5317	28.00	29.90	25.08	5.126	.5349	.6603	2.854	.5568	.3503
2.14	.1027	.1968	.5219	1.902	.7225	.8905	1728	698.4	.5285	27.86	30.16	25.23	5.176	.5317	.6557	2.868	.5554	.3486
2.15	.1011	.1946	.5196	1.919	.7208	.8849	1732	694.0	.5254	27.72	30.43	25.38	5.226	.5285	.6511	2.882	.5540	.3469
2.16	.09956	.1925	.5173	1.935	.7192	.8793	1736	689.6	.5223	27.58	30.69	25.52	5.277	.5253	.6464	2.896	.5525	.3453
2.17	.09808	.1905	.5150	1.953	.7176	.8737	1740	685.2	.5193	27.44	30.95	25.67	5.327	.5221	.6419	2.910	.5511	.3436
2.18	.09663	.1882	.5127	1.970	.7160	.8681	1744	680.8	.5162	27.30	31.21	25.82	5.378	.5189	.6373	2.924	.5498	.3420
2.19	.09500	.1861	.5104	1.987	.7144	.8624	1748	676.4	.5133	27.17	31.47	25.96	5.429	.5157	.6327	2.938	.5484	.3404
2.20	.09358	.1841	.5081	2.005	.7128	.8568	1752	671.9	.5103	27.04	31.73	26.10	5.480	.5125	.6281	2.951	.5471	.3388
2.21	.09207	.1820	.5059	2.023	.7112	.8512	1756	667.5	.5074	26.90	31.99	26.24	5.531	.5093	.6236	2.965	.5457	.3373
2.22	.09064	.1800	.5036	2.041	.7097	.8456	1760	663.1	.5045	26.77	32.25	26.38	5.583	.5061	.6191	2.978	.5444	.3358
2.23	.08923	.1780	.5014	2.059	.7081	.8400	1764	658.7	.5017	26.64	32.51	26.52	5.636	.5028	.6145	2.992	.5431	.3342
2.24	.08785	.1760	.4992	2.078	.7065	.8344	1768	654.3	.4989	26.51	32.76	26.66	5.687	.4996	.6100	3.005	.5418	.3327
2.25	.08648	.1740	.4969	2.096	.7049	.8287	1772	649.9	.4961	26.39	33.02	26.79	5.740	.4964	.6055	3.019	.5406	.3313
2.26	.08514	.1721	.4947	2.115	.7033	.8231	1776	645.5	.4934	26.26	33.27	26.93	5.792	.4931	.6011	3.032	.5393	.3298
2.27	.08382	.1702	.4925	2.134	.7018	.8176	1780	641.1	.4907	26.14	33.53	27.06	5.845	.4899	.5966	3.045	.5381	.3284
2.28	.08251	.1683	.4903	2.154	.7002	.8120	1784	636.8	.4880	26.01	33.78	27.19	5.898	.4867	.5921	3.058	.5368	.3270
2.29	.08123	.1664	.4881	2.173	.6986	.8064	1788	632.4	.4854	25.89	34.03	27.32	5.951	.4835	.5877	3.071	.5356	.3256
2.30	.07997	.1646	.4859	2.193	.6971	.8008	1791	628.0	.4828	25.77	34.28	27.45	6.005	.4802	.5833	3.085	.5344	.3242
2.31	.07873	.1628	.4837	2.213	.6955	.7953	1795	623.7	.4802	25.65	34.53	27.58	6.059	.4770	.5789	3.098	.5332	.3228
2.32	.07751	.1609	.4816	2.233	.6940	.7897	1799	619.3	.4777	25.53	34.78	27.71	6.113	.4738	.5745	3.110	.5321	.3215
2.33	.07631	.1592	.4794	2.254	.6924	.7842	1803	615.0	.4752	25.42	35.03	27.83	6.167	.4706	.5702	3.123	.5309	.3202
2.34	.07512	.1574	.4773	2.274	.6909	.7786	1806	610.6	.4727	25.30	35.28	27.96	6.222	.4674	.5658	3.136	.5297	.3189

NACA

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
2.35	0.07396	0.1556	0.4752	2.895	0.6893	0.7731	1810	606.3	0.4702	25.18	35.53	28.08	6.276	0.4642	0.5615	3.149	0.5286	0.3176
2.36	.07281	.1539	.4731	2.316	.6878	.7676	1814	602.0	.4678	25.07	35.77	28.20	6.331	.4610	.5572	3.162	.5275	.3163
2.37	.07168	.1522	.4709	2.338	.6863	.7621	1817	597.7	.4654	24.96	36.02	28.33	6.386	.4578	.5529	3.174	.5264	.3150
2.38	.07057	.1505	.4688	2.359	.6847	.7567	1821	593.4	.4630	24.85	36.26	28.45	6.442	.4546	.5486	3.187	.5253	.3138
2.39	.06948	.1488	.4668	2.381	.6832	.7512	1824	589.1	.4607	24.73	36.50	28.56	6.497	.4514	.5444	3.199	.5242	.3126
2.40	.06840	.1472	.4647	2.403	.6817	.7458	1828	584.9	.4583	24.62	36.75	28.68	6.553	.4482	.5401	3.212	.5231	.3113
2.41	.06734	.1456	.4626	2.425	.6802	.7404	1832	580.6	.4561	24.52	36.99	28.80	6.609	.4451	.5359	3.224	.5221	.3101
2.42	.06630	.1439	.4606	2.448	.6786	.7350	1835	576.4	.4538	24.41	37.23	28.91	6.666	.4419	.5317	3.237	.5210	.3090
2.43	.06527	.1424	.4585	2.471	.6771	.7296	1839	572.1	.4515	24.30	37.47	29.03	6.722	.4388	.5276	3.249	.5200	.3078
2.44	.06426	.1408	.4565	2.494	.6756	.7242	1842	567.9	.4493	24.19	37.71	29.14	6.779	.4356	.5234	3.261	.5189	.3066
2.45	.06327	.1392	.4544	2.517	.6741	.7189	1845	563.7	.4471	24.09	37.95	29.25	6.836	.4325	.5193	3.273	.5179	.3055
2.46	.06229	.1377	.4524	2.540	.6726	.7135	1849	559.6	.4449	23.99	38.18	29.36	6.894	.4294	.5152	3.285	.5169	.3044
2.47	.06133	.1362	.4504	2.564	.6711	.7082	1852	555.4	.4428	23.88	38.42	29.47	6.951	.4263	.5111	3.298	.5159	.3033
2.48	.06038	.1346	.4484	2.588	.6696	.7029	1856	551.3	.4406	23.78	38.66	29.58	7.009	.4232	.5071	3.310	.5149	.3022
2.49	.05945	.1332	.4464	2.612	.6682	.6977	1859	547.1	.4385	23.68	38.89	29.69	7.067	.4201	.5030	3.321	.5140	.3011
2.50	.05853	.1317	.4444	2.637	.6667	.6924	1862	543.0	.4364	23.58	39.12	29.80	7.125	.4170	.4990	3.333	.5130	.3000
2.51	.05762	.1302	.4425	2.661	.6652	.6872	1866	538.9	.4344	23.48	39.36	29.90	7.183	.4139	.4950	3.345	.5120	.2989
2.52	.05674	.1288	.4405	2.686	.6637	.6820	1869	534.9	.4323	23.38	39.59	30.01	7.242	.4109	.4911	3.357	.5111	.2979
2.53	.05586	.1274	.4386	2.712	.6622	.6768	1872	530.8	.4303	23.28	39.82	30.11	7.301	.4078	.4871	3.369	.5102	.2969
2.54	.05500	.1260	.4366	2.737	.6608	.6717	1875	526.8	.4283	23.19	40.05	30.21	7.360	.4048	.4832	3.380	.5092	.2958
2.55	.05415	.1246	.4347	2.763	.6593	.6666	1879	522.7	.4263	23.09	40.28	30.32	7.420	.4018	.4793	3.392	.5083	.2948
2.56	.05332	.1232	.4328	2.789	.6578	.6615	1882	518.7	.4243	22.99	40.51	30.42	7.479	.3988	.4754	3.403	.5074	.2938
2.57	.05250	.1218	.4309	2.815	.6564	.6564	1885	514.7	.4224	22.90	40.74	30.52	7.539	.3958	.4715	3.415	.5065	.2928
2.58	.05169	.1205	.4289	2.842	.6549	.6513	1888	510.8	.4205	22.81	40.96	30.62	7.599	.3928	.4677	3.426	.5056	.2919
2.59	.05090	.1192	.4271	2.869	.6535	.6463	1891	506.8	.4186	22.71	41.19	30.72	7.659	.3898	.4639	3.438	.5047	.2909
2.60	.05012	.1179	.4252	2.896	.6521	.6413	1894	502.9	.4167	22.62	41.41	30.81	7.720	.3869	.4601	3.449	.5039	.2899
2.61	.04935	.1166	.4233	2.923	.6506	.6363	1897	499.0	.4148	22.53	41.64	30.91	7.781	.3839	.4564	3.460	.5030	.2890
2.62	.04859	.1153	.4214	2.951	.6492	.6314	1900	495.1	.4129	22.44	41.86	31.01	7.842	.3810	.4526	3.471	.5022	.2881
2.63	.04784	.1140	.4196	2.979	.6477	.6264	1904	491.3	.4111	22.35	42.09	31.10	7.903	.3781	.4489	3.483	.5013	.2871
2.64	.04711	.1128	.4177	3.007	.6463	.6215	1907	487.4	.4093	22.26	42.31	31.19	7.965	.3752	.4452	3.494	.5005	.2862
2.65	.04639	.1115	.4159	3.036	.6449	.6166	1910	483.6	.4075	22.17	42.53	31.29	8.026	.3723	.4416	3.505	.4996	.2853
2.66	.04568	.1103	.4141	3.065	.6435	.6118	1913	479.8	.4057	22.08	42.75	31.38	8.088	.3695	.4379	3.516	.4988	.2844
2.67	.04498	.1091	.4122	3.094	.6421	.6070	1916	476.0	.4039	22.00	42.97	31.47	8.150	.3666	.4343	3.527	.4980	.2836
2.68	.04429	.1079	.4104	3.123	.6406	.6022	1918	472.3	.4022	21.91	43.19	31.56	8.213	.3638	.4307	3.537	.4972	.2827
2.69	.04362	.1067	.4086	3.153	.6392	.5974	1921	468.5	.4004	21.82	43.40	31.65	8.275	.3609	.4271	3.548	.4964	.2818
2.70	.04295	.1056	.4068	3.183	.6378	.5927	1924	464.8	.3987	21.74	43.62	31.74	8.338	.3581	.4236	3.559	.4956	.2810
2.71	.04229	.1044	.4051	3.213	.6364	.5880	1927	461.1	.3970	21.65	43.84	31.83	8.401	.3553	.4201	3.570	.4949	.2801
2.72	.04165	.1033	.4033	3.244	.6350	.5833	1930	457.4	.3953	21.57	44.05	31.92	8.465	.3526	.4166	3.580	.4941	.2793
2.73	.04102	.1022	.4015	3.275	.6337	.5786	1933	453.8	.3937	21.49	44.27	32.00	8.528	.3498	.4131	3.591	.4933	.2785
2.74	.04039	.1010	.3998	3.306	.6323	.5740	1936	450.2	.3920	21.41	44.48	32.09	8.592	.3470	.4097	3.601	.4926	.2777
2.75	.03978	.09994	.3980	3.338	.6309	.5694	1939	446.6	.3904	21.32	44.69	32.17	8.656	.3443	.4062	3.612	.4918	.2769
2.76	.03917	.09885	.3963	3.370	.6295	.5648	1941	443.0	.3887	21.24	44.91	32.26	8.721	.3416	.4028	3.622	.4911	.2761
2.77	.03858	.09778	.3945	3.402	.6281	.5603	1944	439.4	.3871	21.16	45.12	32.34	8.785	.3389	.3994	3.633	.4903	.2753
2.78	.03799	.09671	.3928	3.434	.6268	.5558	1947	435.9	.3855	21.08	45.33	32.42	8.850	.3362	.3961	3.643	.4896	.2745
2.79	.03742	.09566	.3911	3.467	.6254	.5513	1950	432.3	.3839	21.00	45.54	32.51	8.915	.3335	.3928	3.653	.4889	.2737

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
2.80	0.03685	0.09463	0.3894	3.500	0.6240	0.5468	1952	428.9	0.3824	20.92	45.75	32.59	8.980	0.3309	0.3895	3.664	0.4882	0.2730
2.81	.03689	.09360	.3877	3.534	.6227	.5424	1955	425.4	.3808	20.85	45.95	32.67	9.045	.3283	.3866	3.674	.4875	.2722
2.82	.03574	.09259	.3860	3.567	.6213	.5380	1958	421.9	.3793	20.77	46.16	32.75	9.111	.3256	.3839	3.684	.4868	.2715
2.83	.03520	.09158	.3844	3.601	.6200	.5337	1960	418.5	.3777	20.69	46.37	32.83	9.177	.3230	.3797	3.694	.4861	.2707
2.84	.03467	.09059	.3827	3.636	.6186	.5293	1963	415.1	.3762	20.62	46.57	32.91	9.243	.3205	.3765	3.704	.4854	.2700
2.85	.03415	.08962	.3810	3.671	.6173	.5250	1966	411.7	.3747	20.54	46.78	32.98	9.310	.3179	.3733	3.714	.4847	.2693
2.86	.03363	.08865	.3794	3.706	.6159	.5207	1968	408.4	.3732	20.47	46.98	33.06	9.376	.3153	.3701	3.724	.4840	.2685
2.87	.03312	.08769	.3777	3.741	.6146	.5165	1971	405.0	.3717	20.39	47.19	33.14	9.443	.3128	.3670	3.734	.4833	.2678
2.88	.03263	.08675	.3761	3.777	.6133	.5122	1974	401.7	.3703	20.32	47.39	33.21	9.510	.3103	.3639	3.743	.4827	.2671
2.89	.03213	.08581	.3745	3.813	.6119	.5080	1976	398.4	.3688	20.24	47.59	33.29	9.577	.3078	.3608	3.753	.4820	.2664
2.90	.03165	.08489	.3729	3.850	.6106	.5039	1979	395.2	.3674	20.17	47.79	33.36	9.645	.3053	.3577	3.763	.4814	.2658
2.91	.03118	.08398	.3712	3.887	.6093	.4997	1981	391.9	.3659	20.10	47.99	33.44	9.713	.3028	.3547	3.773	.4807	.2651
2.92	.03071	.08307	.3696	3.924	.6080	.4956	1984	388.7	.3645	20.03	48.19	33.51	9.781	.3004	.3517	3.782	.4801	.2644
2.93	.03025	.08218	.3681	3.961	.6067	.4915	1986	385.5	.3631	19.96	48.39	33.58	9.849	.2979	.3487	3.792	.4795	.2637
2.94	.02980	.08130	.3665	3.999	.6054	.4875	1989	382.3	.3617	19.89	48.59	33.65	9.918	.2955	.3457	3.801	.4788	.2631
2.95	.02935	.08043	.3649	4.038	.6041	.4835	1991	379.2	.3603	19.81	48.78	33.73	9.986	.2931	.3428	3.811	.4782	.2624
2.96	.02891	.07957	.3633	4.076	.6028	.4795	1994	376.0	.3589	19.75	48.98	33.80	10.06	.2907	.3398	3.820	.4776	.2618
2.97	.02848	.07872	.3618	4.115	.6015	.4755	1996	372.9	.3576	19.68	49.18	33.87	10.12	.2883	.3369	3.829	.4770	.2611
2.98	.02805	.07788	.3602	4.155	.6002	.4716	1998	369.8	.3562	19.61	49.37	33.94	10.19	.2860	.3340	3.839	.4764	.2605
2.99	.02764	.07705	.3587	4.194	.5989	.4677	2001	366.8	.3549	19.54	49.56	34.01	10.26	.2836	.3312	3.848	.4758	.2599
3.00	.02722	.07623	.3571	4.235	.5976	.4638	2003	363.7	.3536	19.47	49.76	34.07	10.33	.2813	.3283	3.857	.4752	.2593
3.01	.02682	.07541	.3556	4.275	.5963	.4599	2006	360.7	.3522	19.40	49.95	34.14	10.40	.2790	.3255	3.866	.4746	.2586
3.02	.02642	.07461	.3541	4.316	.5951	.4561	2008	357.7	.3509	19.34	50.14	34.21	10.47	.2767	.3227	3.875	.4740	.2580
3.03	.02603	.07382	.3526	4.357	.5938	.4523	2010	354.7	.3496	19.27	50.33	34.27	10.54	.2744	.3200	3.884	.4734	.2574
3.04	.02564	.07303	.3511	4.399	.5925	.4486	2013	351.8	.3483	19.20	50.52	34.34	10.62	.2722	.3172	3.893	.4729	.2568
3.05	.02526	.07226	.3496	4.441	.5913	.4448	2015	348.8	.3471	19.14	50.71	34.41	10.69	.2699	.3145	3.902	.4723	.2562
3.06	.02489	.07149	.3481	4.483	.5900	.4411	2017	345.9	.3458	19.07	50.90	34.47	10.76	.2677	.3118	3.911	.4717	.2557
3.07	.02452	.07074	.3466	4.526	.5887	.4374	2020	343.0	.3445	19.01	51.09	34.54	10.83	.2655	.3091	3.920	.4712	.2551
3.08	.02416	.06999	.3452	4.570	.5875	.4338	2022	340.2	.3433	18.95	51.28	34.60	10.90	.2633	.3065	3.929	.4706	.2545
3.09	.02380	.06925	.3437	4.613	.5862	.4302	2024	337.3	.3420	18.88	51.46	34.66	10.97	.2611	.3038	3.938	.4701	.2539
3.10	.02345	.06852	.3422	4.657	.5850	.4266	2026	334.5	.3408	18.82	51.65	34.73	11.05	.2590	.3012	3.947	.4695	.2534
3.11	.02310	.06779	.3408	4.702	.5838	.4230	2029	331.7	.3396	18.76	51.84	34.79	11.12	.2568	.2986	3.955	.4690	.2528
3.12	.02276	.06708	.3393	4.747	.5825	.4194	2031	328.9	.3384	18.69	52.02	34.85	11.19	.2547	.2960	3.964	.4685	.2523
3.13	.02243	.06637	.3379	4.792	.5813	.4159	2033	326.2	.3373	18.63	52.20	34.91	11.26	.2526	.2935	3.973	.4679	.2517
3.14	.02210	.06568	.3365	4.838	.5801	.4124	2035	323.4	.3360	18.57	52.39	34.97	11.34	.2505	.2910	3.981	.4674	.2512
3.15	.02177	.06499	.3351	4.884	.5788	.4090	2037	320.7	.3348	18.51	52.57	35.03	11.41	.2484	.2885	3.990	.4669	.2507
3.16	.02146	.06430	.3337	4.930	.5776	.4055	2040	318.0	.3336	18.45	52.75	35.09	11.48	.2464	.2860	3.998	.4664	.2501
3.17	.02114	.06363	.3323	4.977	.5764	.4021	2042	315.4	.3324	18.39	52.93	35.15	11.56	.2443	.2835	4.006	.4659	.2496
3.18	.02083	.06296	.3309	5.025	.5752	.3988	2044	312.7	.3313	18.33	53.11	35.21	11.63	.2423	.2811	4.015	.4654	.2491
3.19	.02053	.06231	.3295	5.073	.5740	.3954	2046	310.1	.3301	18.27	53.29	35.27	11.71	.2403	.2786	4.023	.4648	.2486
3.20	.02023	.06165	.3281	5.121	.5728	.3921	2048	307.5	.3290	18.21	53.47	35.33	11.78	.2383	.2762	4.031	.4643	.2480
3.21	.01993	.06101	.3267	5.170	.5716	.3888	2050	304.9	.3278	18.15	53.65	35.39	11.85	.2363	.2738	4.040	.4639	.2475
3.22	.01964	.06037	.3253	5.219	.5704	.3855	2052	302.3	.3267	18.09	53.83	35.44	11.93	.2343	.2715	4.048	.4634	.2470
3.23	.01936	.05975	.3240	5.268	.5692	.3823	2054	299.8	.3256	18.04	54.00	35.50	12.01	.2324	.2691	4.056	.4629	.2465
3.24	.01908	.05912	.3226	5.319	.5680	.3790	2056	297.3	.3245	17.98	54.18	35.55	12.08	.2304	.2668	4.064	.4624	.2460

NACA

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
3.25	0.01880	0.05851	0.3213	5.369	0.5668	0.3759	2058	294.8	0.3234	17.92	54.35	35.61	12.16	0.2285	0.2645	4.072	0.4619	0.2456
3.26	.01853	.05790	.3199	5.420	.5656	.3727	2060	292.3	.3223	17.86	54.53	35.67	12.23	.2266	.2622	4.080	.4614	.2451
3.27	.01826	.05730	.3186	5.472	.5645	.3695	2062	289.8	.3212	17.81	54.70	35.72	12.31	.2247	.2600	4.088	.4610	.2446
3.28	.01799	.05671	.3173	5.523	.5633	.3664	2064	287.4	.3201	17.75	54.88	35.77	12.38	.2228	.2577	4.096	.4605	.2441
3.29	.01773	.05612	.3160	5.576	.5621	.3633	2066	284.9	.3190	17.70	55.05	35.83	12.46	.2210	.2555	4.104	.4600	.2437
3.30	.01748	.05554	.3147	5.629	.5609	.3603	2068	282.5	.3180	17.64	55.22	35.88	12.54	.2191	.2533	4.112	.4596	.2432
3.31	.01722	.05497	.3134	5.682	.5598	.3572	2070	280.1	.3169	17.58	55.39	35.93	12.62	.2173	.2511	4.120	.4591	.2427
3.32	.01698	.05440	.3121	5.736	.5586	.3542	2072	277.8	.3159	17.53	55.56	35.99	12.69	.2155	.2489	4.128	.4587	.2423
3.33	.01673	.05384	.3108	5.790	.5575	.3512	2074	275.4	.3148	17.48	55.73	36.04	12.77	.2137	.2468	4.135	.4582	.2418
3.34	.01649	.05329	.3095	5.845	.5563	.3482	2076	273.1	.3138	17.42	55.90	36.09	12.85	.2119	.2446	4.143	.4578	.2414
3.35	.01625	.05274	.3082	5.900	.5552	.3453	2078	270.8	.3128	17.37	56.07	36.14	12.93	.2101	.2425	4.151	.4573	.2409
3.36	.01602	.05220	.3069	5.956	.5540	.3424	2080	268.5	.3117	17.31	56.24	36.19	13.00	.2084	.2404	4.158	.4569	.2405
3.37	.01579	.05166	.3057	6.012	.5529	.3395	2082	266.2	.3107	17.26	56.41	36.24	13.08	.2066	.2383	4.166	.4565	.2400
3.38	.01557	.05113	.3044	6.069	.5517	.3366	2084	264.0	.3097	17.21	56.58	36.29	13.16	.2049	.2363	4.173	.4560	.2396
3.39	.01534	.05061	.3032	6.126	.5506	.3338	2086	261.8	.3087	17.16	56.74	36.34	13.24	.2032	.2342	4.181	.4556	.2392
3.40	.01512	.05009	.3019	6.184	.5495	.3310	2088	259.5	.3077	17.10	56.91	36.39	13.32	.2015	.2322	4.188	.4552	.2388
3.41	.01491	.04958	.3007	6.242	.5484	.3282	2089	257.4	.3067	17.05	57.07	36.44	13.40	.1998	.2302	4.196	.4548	.2383
3.42	.01470	.04908	.2995	6.301	.5472	.3254	2091	255.2	.3058	17.00	57.24	36.49	13.48	.1981	.2282	4.203	.4544	.2379
3.43	.01449	.04858	.2982	6.360	.5461	.3226	2093	253.0	.3048	16.95	57.40	36.54	13.56	.1964	.2263	4.211	.4540	.2375
3.44	.01428	.04808	.2970	6.420	.5450	.3199	2095	250.9	.3038	16.90	57.56	36.59	13.64	.1948	.2243	4.218	.4535	.2371
3.45	.01408	.04759	.2958	6.480	.5439	.3172	2097	248.8	.3029	16.85	57.73	36.63	13.72	.1932	.2224	4.225	.4531	.2367
3.46	.01388	.04711	.2946	6.541	.5428	.3145	2098	246.7	.3019	16.80	57.89	36.68	13.80	.1915	.2205	4.232	.4527	.2363
3.47	.01368	.04663	.2934	6.602	.5417	.3119	2100	244.6	.3010	16.75	58.05	36.73	13.88	.1899	.2186	4.240	.4523	.2359
3.48	.01349	.04616	.2922	6.664	.5406	.3092	2102	242.5	.3000	16.70	58.21	36.78	13.96	.1883	.2167	4.247	.4519	.2355
3.49	.01330	.04569	.2910	6.727	.5395	.3066	2104	240.5	.2991	16.65	58.37	36.82	14.04	.1868	.2148	4.254	.4515	.2351
3.50	.01311	.04523	.2899	6.790	.5384	.3040	2106	238.4	.2981	16.60	58.53	36.87	14.13	.1852	.2129	4.261	.4512	.2347
3.51	.01293	.04478	.2887	6.853	.5373	.3015	2107	236.4	.2972	16.55	58.69	36.91	14.21	.1836	.2111	4.268	.4508	.2343
3.52	.01274	.04433	.2875	6.917	.5362	.2989	2109	234.4	.2963	16.50	58.85	36.96	14.29	.1821	.2093	4.275	.4504	.2339
3.53	.01256	.04388	.2864	6.982	.5351	.2964	2111	232.4	.2954	16.46	59.00	37.00	14.37	.1806	.2075	4.282	.4500	.2335
3.54	.01239	.04344	.2852	7.047	.5340	.2939	2112	230.5	.2945	16.41	59.16	37.05	14.45	.1791	.2057	4.289	.4496	.2332
3.55	.01221	.04300	.2841	7.113	.5330	.2914	2114	228.5	.2936	16.36	59.32	37.09	14.54	.1776	.2039	4.296	.4492	.2328
3.56	.01204	.04257	.2829	7.179	.5319	.2889	2116	226.6	.2927	16.31	59.47	37.13	14.62	.1761	.2022	4.303	.4489	.2324
3.57	.01188	.04214	.2818	7.246	.5308	.2865	2117	224.7	.2918	16.27	59.63	37.18	14.70	.1746	.2004	4.309	.4485	.2321
3.58	.01171	.04172	.2806	7.313	.5298	.2841	2119	222.8	.2909	16.22	59.78	37.22	14.79	.1731	.1987	4.316	.4481	.2317
3.59	.01155	.04131	.2795	7.382	.5287	.2817	2121	220.9	.2900	16.17	59.94	37.26	14.87	.1717	.1970	4.323	.4478	.2313
3.60	.01138	.04089	.2784	7.450	.5276	.2793	2122	219.0	.2892	16.13	60.09	37.31	14.95	.1702	.1953	4.330	.4474	.2310
3.61	.01123	.04049	.2773	7.519	.5266	.2769	2124	217.2	.2883	16.08	60.24	37.35	15.04	.1688	.1936	4.336	.4471	.2306
3.62	.01107	.04008	.2762	7.589	.5255	.2746	2126	215.4	.2874	16.04	60.40	37.39	15.12	.1674	.1920	4.343	.4467	.2303
3.63	.01092	.03968	.2751	7.659	.5245	.2723	2127	213.5	.2866	15.99	60.55	37.43	15.21	.1660	.1903	4.350	.4463	.2299
3.64	.01076	.03929	.2740	7.730	.5234	.2700	2129	211.7	.2857	15.95	60.70	37.47	15.29	.1646	.1887	4.356	.4460	.2296
3.65	.01062	.03890	.2729	7.802	.5224	.2677	2131	209.9	.2849	15.90	60.85	37.51	15.38	.1632	.1871	4.363	.4456	.2292
3.66	.01047	.03852	.2718	7.874	.5213	.2655	2132	208.2	.2840	15.86	61.00	37.55	15.46	.1619	.1855	4.369	.4453	.2289
3.67	.01032	.03813	.2707	7.947	.5203	.2632	2134	206.4	.2832	15.81	61.15	37.59	15.55	.1605	.1839	4.376	.4450	.2285
3.68	.01018	.03776	.2697	8.020	.5193	.2610	2135	204.7	.2824	15.77	61.30	37.63	15.63	.1592	.1823	4.382	.4446	.2282
3.69	.01004	.03739	.2686	8.094	.5183	.2588	2137	203.0	.2815	15.72	61.45	37.67	15.72	.1578	.1807	4.388	.4443	.2279

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
3.70	0.009903	0.03702	0.2675	8.169	0.5172	0.2566	2138	201.3	0.2807	15.68	61.60	37.71	15.81	0.1565	0.1792	4.395	0.4439	0.2275
3.71	.009767	.03665	.2665	8.244	.5162	.2545	2140	199.6	.2799	15.64	61.74	37.75	15.89	.1552	.1777	4.401	.4436	.2272
3.72	.009633	.03629	.2654	8.320	.5152	.2523	2141	197.9	.2791	15.59	61.89	37.79	15.98	.1539	.1761	4.408	.4433	.2269
3.73	.009500	.03594	.2644	8.397	.5142	.2502	2143	196.2	.2783	15.55	62.04	37.83	16.07	.1526	.1746	4.414	.4430	.2266
3.74	.009370	.03558	.2633	8.474	.5132	.2481	2144	194.6	.2775	15.51	62.18	37.87	16.15	.1513	.1731	4.420	.4426	.2262
3.75	.009242	.03524	.2623	8.552	.5121	.2460	2146	192.9	.2767	15.47	62.33	37.91	16.24	.1501	.1717	4.426	.4423	.2259
3.76	.009116	.03489	.2613	8.630	.5111	.2439	2147	191.3	.2759	15.42	62.47	37.94	16.33	.1488	.1702	4.432	.4420	.2256
3.77	.008991	.03455	.2602	8.709	.5101	.2419	2149	189.7	.2751	15.38	62.61	37.98	16.42	.1476	.1687	4.439	.4417	.2253
3.78	.008869	.03421	.2592	8.789	.5091	.2399	2150	188.1	.2743	15.34	62.76	38.02	16.50	.1464	.1673	4.445	.4414	.2250
3.79	.008748	.03388	.2582	8.870	.5081	.2379	2152	186.5	.2735	15.30	62.90	38.06	16.59	.1451	.1659	4.451	.4410	.2247
3.80	.008629	.03355	.2572	8.951	.5072	.2359	2153	185.0	.2728	15.26	63.04	38.09	16.68	.1439	.1645	4.457	.4407	.2244
3.81	.008512	.03322	.2562	9.032	.5062	.2339	2155	183.4	.2720	15.22	63.19	38.13	16.77	.1427	.1631	4.463	.4404	.2241
3.82	.008396	.03290	.2552	9.115	.5052	.2319	2156	181.9	.2712	15.18	63.33	38.16	16.86	.1415	.1617	4.469	.4401	.2238
3.83	.008283	.03258	.2542	9.198	.5042	.2300	2158	180.4	.2705	15.14	63.47	38.20	16.95	.1404	.1603	4.475	.4398	.2235
3.84	.008171	.03227	.2532	9.282	.5032	.2281	2159	178.8	.2697	15.09	63.61	38.24	17.04	.1392	.1589	4.481	.4395	.2232
3.85	.008060	.03195	.2522	9.366	.5022	.2261	2161	177.4	.2690	15.05	63.75	38.27	17.13	.1380	.1576	4.487	.4392	.2229
3.86	.007951	.03165	.2513	9.451	.5013	.2243	2162	175.9	.2682	15.01	63.89	38.31	17.22	.1369	.1563	4.492	.4389	.2226
3.87	.007844	.03134	.2503	9.537	.5003	.2224	2163	174.4	.2675	14.98	64.03	38.34	17.31	.1358	.1549	4.498	.4386	.2223
3.88	.007739	.03104	.2493	9.624	.4993	.2205	2165	172.9	.2667	14.94	64.16	38.38	17.40	.1346	.1536	4.504	.4383	.2220
3.89	.007635	.03074	.2484	9.711	.4984	.2187	2166	171.5	.2660	14.90	64.30	38.41	17.49	.1335	.1523	4.510	.4380	.2217
3.90	.007532	.03044	.2474	9.799	.4974	.2169	2168	170.1	.2653	14.86	64.44	38.44	17.58	.1324	.1510	4.516	.4377	.2215
3.91	.007431	.03015	.2464	9.888	.4964	.2150	2169	168.6	.2646	14.82	64.58	38.48	17.67	.1313	.1497	4.521	.4375	.2212
3.92	.007332	.02986	.2455	9.977	.4955	.2133	2170	167.2	.2638	14.78	64.71	38.51	17.76	.1302	.1485	4.527	.4372	.2209
3.93	.007233	.02958	.2446	10.07	.4945	.2115	2172	165.8	.2631	14.74	64.85	38.55	17.85	.1291	.1472	4.533	.4369	.2206
3.94	.007137	.02929	.2436	10.16	.4936	.2097	2173	164.5	.2624	14.70	64.98	38.58	17.94	.1281	.1460	4.538	.4366	.2203
3.95	.007042	.02902	.2427	10.25	.4926	.2080	2174	163.1	.2617	14.66	65.12	38.61	18.04	.1270	.1448	4.544	.4363	.2201
3.96	.006948	.02874	.2418	10.34	.4917	.2062	2176	161.7	.2610	14.63	65.25	38.65	18.13	.1260	.1435	4.549	.4360	.2198
3.97	.006855	.02846	.2408	10.44	.4908	.2045	2177	160.4	.2603	14.59	65.39	38.68	18.22	.1249	.1423	4.555	.4358	.2195
3.98	.006764	.02819	.2399	10.53	.4898	.2028	2178	159.1	.2596	14.55	65.52	38.71	18.31	.1239	.1411	4.560	.4355	.2193
3.99	.006675	.02793	.2390	10.62	.4889	.2011	2180	157.7	.2589	14.51	65.65	38.74	18.41	.1229	.1399	4.566	.4352	.2190
4.00	.006586	.02766	.2381	10.72	.4880	.1995	2181	156.4	.2582	14.48	65.78	38.77	18.50	.1218	.1388	4.571	.4350	.2188
4.01	.006499	.02740	.2372	10.81	.4870	.1978	2182	155.1	.2575	14.44	65.92	38.81	18.59	.1208	.1376	4.577	.4347	.2185
4.02	.006413	.02714	.2363	10.91	.4861	.1962	2183	153.8	.2568	14.40	66.05	38.84	18.69	.1198	.1364	4.582	.4344	.2182
4.03	.006328	.02688	.2354	11.01	.4852	.1946	2185	152.6	.2561	14.37	66.18	38.87	18.78	.1189	.1353	4.588	.4342	.2180
4.04	.006245	.02663	.2345	11.11	.4843	.1929	2186	151.3	.2555	14.33	66.31	38.90	18.88	.1179	.1342	4.593	.4339	.2177
4.05	.006163	.02638	.2336	11.21	.4833	.1913	2187	150.1	.2548	14.29	66.44	38.93	18.97	.1169	.1330	4.598	.4336	.2175
4.06	.006082	.02613	.2327	11.31	.4824	.1898	2189	148.8	.2541	14.26	66.57	38.96	19.06	.1159	.1319	4.604	.4334	.2172
4.07	.006002	.02589	.2319	11.41	.4815	.1882	2190	147.6	.2535	14.22	66.70	38.99	19.16	.1150	.1308	4.609	.4331	.2170
4.08	.005923	.02564	.2310	11.51	.4806	.1866	2191	146.4	.2528	14.19	66.83	39.02	19.25	.1140	.1297	4.614	.4329	.2167
4.09	.005845	.02540	.2301	11.61	.4797	.1851	2192	145.2	.2522	14.15	66.95	39.05	19.35	.1131	.1286	4.619	.4326	.2165
4.10	.005769	.02516	.2293	11.71	.4788	.1836	2194	144.0	.2515	14.12	67.08	39.08	19.45	.1122	.1276	4.624	.4324	.2162
4.11	.005694	.02493	.2284	11.82	.4779	.1821	2195	142.8	.2508	14.08	67.21	39.11	19.54	.1113	.1265	4.630	.4321	.2160
4.12	.005619	.02470	.2275	11.92	.4770	.1806	2196	141.6	.2502	14.05	67.34	39.14	19.64	.1103	.1254	4.635	.4319	.2158
4.13	.005546	.02447	.2267	12.03	.4761	.1791	2197	140.4	.2496	14.01	67.46	39.17	19.73	.1094	.1244	4.640	.4316	.2155
4.14	.005474	.02424	.2258	12.14	.4752	.1776	2198	139.3	.2489	13.98	67.59	39.20	19.83	.1085	.1234	4.645	.4314	.2153

NACA

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
4.15	0.005403	0.02401	0.2250	12.24	0.4743	0.1761	2200	138.1	0.2483	13.94	67.71	39.23	19.93	0.1077	0.1223	4.650	0.4311	0.2151
4.16	.005333	.02379	.2242	12.35	.4735	.1747	2201	137.0	.2476	13.91	67.84	39.26	20.02	.1068	.1213	4.655	.4309	.2148
4.17	.005264	.02357	.2233	12.46	.4726	.1733	2202	135.9	.2470	13.88	67.96	39.28	20.12	.1059	.1203	4.660	.4306	.2146
4.18	.005195	.02335	.2225	12.57	.4717	.1718	2203	134.8	.2464	13.84	68.09	39.31	20.22	.1050	.1193	4.665	.4304	.2144
4.19	.005128	.02313	.2217	12.68	.4708	.1704	2204	133.7	.2458	13.81	68.21	39.34	20.32	.1042	.1183	4.670	.4302	.2141
4.20	.005062	.02292	.2208	12.79	.4699	.1690	2205	132.6	.2451	13.77	68.33	39.37	20.41	.1033	.1173	4.675	.4299	.2139
4.21	.004997	.02271	.2200	12.90	.4691	.1676	2207	131.5	.2445	13.74	68.46	39.40	20.51	.1025	.1164	4.680	.4297	.2137
4.22	.004932	.02250	.2192	13.02	.4682	.1663	2208	130.4	.2439	13.71	68.58	39.42	20.61	.1017	.1154	4.685	.4295	.2135
4.23	.004869	.02229	.2184	13.13	.4673	.1649	2209	129.3	.2433	13.67	68.70	39.45	20.71	.1008	.1144	4.690	.4292	.2132
4.24	.004806	.02209	.2176	13.25	.4665	.1636	2210	128.3	.2427	13.64	68.82	39.48	20.81	.1000	.1135	4.694	.4290	.2130
4.25	.004745	.02189	.2168	13.36	.4656	.1622	2211	127.2	.2421	13.61	68.94	39.51	20.91	.09920	.1126	4.699	.4288	.2128
4.26	.004684	.02169	.2160	13.48	.4648	.1609	2212	126.2	.2415	13.58	69.06	39.53	21.01	.09839	.1116	4.704	.4286	.2126
4.27	.004624	.02149	.2152	13.60	.4639	.1596	2213	125.2	.2409	13.54	69.18	39.56	21.11	.09759	.1107	4.709	.4283	.2124
4.28	.004565	.02129	.2144	13.72	.4631	.1583	2215	124.1	.2403	13.51	69.30	39.58	21.20	.09680	.1098	4.713	.4281	.2122
4.29	.004507	.02110	.2136	13.83	.4622	.1570	2216	123.1	.2397	13.48	69.42	39.61	21.30	.09602	.1089	4.718	.4279	.2119
4.30	.004449	.02090	.2129	13.95	.4614	.1557	2217	122.1	.2391	13.45	69.54	39.64	21.41	.09524	.1080	4.723	.4277	.2117
4.31	.004393	.02071	.2121	14.08	.4605	.1545	2218	121.1	.2385	13.42	69.66	39.66	21.51	.09447	.1071	4.728	.4275	.2115
4.32	.004337	.02052	.2113	14.20	.4597	.1532	2219	120.2	.2379	13.38	69.78	39.69	21.61	.09371	.1062	4.732	.4272	.2113
4.33	.004282	.02034	.2105	14.32	.4588	.1520	2220	119.2	.2374	13.35	69.89	39.71	21.71	.09295	.1054	4.737	.4270	.2111
4.34	.004228	.02015	.2098	14.45	.4580	.1507	2221	118.2	.2368	13.32	70.01	39.74	21.81	.09220	.1045	4.741	.4268	.2109
4.35	.004174	.01997	.2090	14.57	.4572	.1495	2222	117.3	.2362	13.29	70.13	39.77	21.91	.09145	.1036	4.746	.4266	.2107
4.36	.004121	.01979	.2083	14.70	.4563	.1483	2223	116.3	.2356	13.26	70.24	39.79	22.01	.09072	.1028	4.751	.4264	.2105
4.37	.004069	.01961	.2075	14.82	.4555	.1471	2224	115.4	.2351	13.23	70.36	39.82	22.11	.08999	.1020	4.755	.4262	.2103
4.38	.004018	.01944	.2067	14.95	.4547	.1459	2225	114.4	.2345	13.20	70.48	39.84	22.22	.08926	.1011	4.760	.4260	.2101
4.39	.003968	.01926	.2060	15.08	.4539	.1447	2226	113.5	.2339	13.17	70.59	39.87	22.32	.08854	.1003	4.764	.4258	.2099
4.40	.003918	.01909	.2053	15.21	.4531	.1436	2227	112.6	.2334	13.14	70.71	39.89	22.42	.08783	.09948	4.768	.4255	.2097
4.41	.003868	.01892	.2045	15.34	.4522	.1424	2228	111.7	.2328	13.11	70.82	39.91	22.52	.08713	.09867	4.773	.4253	.2095
4.42	.003820	.01875	.2038	15.47	.4514	.1413	2229	110.8	.2323	13.08	70.93	39.94	22.63	.08643	.09787	4.777	.4251	.2093
4.43	.003772	.01858	.2030	15.61	.4506	.1401	2230	109.9	.2317	13.05	71.05	39.96	22.73	.08574	.09707	4.782	.4249	.2091
4.44	.003725	.01841	.2023	15.74	.4498	.1390	2232	109.0	.2312	13.02	71.16	39.98	22.83	.08505	.09628	4.786	.4247	.2089
4.45	.003678	.01825	.2016	15.87	.4490	.1379	2233	108.1	.2306	12.99	71.27	40.01	22.94	.08437	.09550	4.790	.4245	.2087
4.46	.003633	.01808	.2009	16.01	.4482	.1368	2234	107.3	.2301	12.96	71.39	40.03	23.04	.08369	.09473	4.795	.4243	.2086
4.47	.003587	.01792	.2002	16.15	.4474	.1357	2235	106.4	.2295	12.93	71.50	40.06	23.14	.08303	.09396	4.799	.4241	.2084
4.48	.003543	.01776	.1994	16.28	.4466	.1346	2236	105.6	.2290	12.90	71.61	40.08	23.25	.08236	.09320	4.803	.4239	.2082
4.49	.003499	.01761	.1987	16.42	.4458	.1335	2237	104.7	.2285	12.87	71.72	40.10	23.35	.08171	.09244	4.808	.4237	.2080
4.50	.003455	.01745	.1980	16.56	.4450	.1324	2238	103.9	.2279	12.84	71.83	40.13	23.46	.08105	.09170	4.812	.4236	.2078
4.51	.003412	.01729	.1973	16.70	.4442	.1314	2238	103.0	.2274	12.81	71.94	40.15	23.56	.08041	.09096	4.816	.4234	.2076
4.52	.003370	.01714	.1966	16.84	.4434	.1303	2239	102.2	.2269	12.78	72.05	40.17	23.67	.07977	.09022	4.820	.4232	.2075
4.53	.003329	.01699	.1959	16.99	.4426	.1293	2240	101.4	.2263	12.75	72.16	40.19	23.77	.07913	.08950	4.824	.4230	.2073
4.54	.003288	.01684	.1952	17.13	.4418	.1283	2241	100.6	.2258	12.72	72.27	40.22	23.88	.07851	.08878	4.829	.4228	.2071
4.55	.003247	.01669	.1945	17.28	.4411	.1272	2242	99.79	.2253	12.70	72.38	40.24	23.99	.07788	.08806	4.833	.4226	.2069
4.56	.003207	.01654	.1938	17.42	.4403	.1262	2243	98.99	.2248	12.67	72.49	40.26	24.09	.07727	.08735	4.837	.4224	.2067
4.57	.003168	.01640	.1932	17.57	.4395	.1252	2244	98.21	.2243	12.64	72.60	40.28	24.20	.07665	.08665	4.841	.4222	.2066
4.58	.003129	.01625	.1925	17.72	.4387	.1242	2245	97.43	.2237	12.61	72.70	40.31	24.31	.07605	.08596	4.845	.4220	.2064
4.59	.003090	.01611	.1918	17.87	.4380	.1232	2246	96.65	.2232	12.58	72.81	40.33	24.41	.07544	.08527	4.849	.4219	.2062

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
4.60	0.003053	0.01597	0.1911	18.02	0.4372	0.1223	2247	95.89	0.2227	12.56	72.92	40.35	24.32	0.07485	0.08459	4.853	0.4217	0.2060
4.61	.003015	.01583	.1905	18.17	.4364	.1213	2248	95.13	.2222	12.53	73.03	40.37	24.63	.07426	.08391	4.857	.4215	.2059
4.62	.002978	.01569	.1898	18.32	.4357	.1203	2249	94.37	.2217	12.50	73.13	40.39	24.74	.07367	.08324	4.861	.4213	.2057
4.63	.002942	.01556	.1891	18.48	.4349	.1194	2250	93.63	.2212	12.47	73.24	40.41	24.84	.07309	.08257	4.865	.4211	.2055
4.64	.002906	.01542	.1885	18.63	.4341	.1184	2251	92.89	.2207	12.45	73.34	40.43	24.95	.07252	.08192	4.869	.4210	.2054
4.65	.002871	.01529	.1878	18.79	.4334	.1175	2252	92.15	.2202	12.42	73.45	40.46	25.06	.07194	.08126	4.873	.4208	.2052
4.66	.002836	.01515	.1872	18.94	.4326	.1166	2253	91.43	.2197	12.39	73.55	40.48	25.17	.07138	.08062	4.877	.4206	.2050
4.67	.002802	.01502	.1865	19.10	.4319	.1157	2254	90.70	.2192	12.36	73.66	40.50	25.28	.07082	.07998	4.881	.4204	.2049
4.68	.002768	.01489	.1859	19.26	.4311	.1147	2254	89.99	.2187	12.34	73.76	40.52	25.39	.07026	.07934	4.885	.4203	.2047
4.69	.002734	.01476	.1852	19.42	.4304	.1138	2255	89.28	.2182	12.31	73.87	40.54	25.50	.06971	.07871	4.889	.4201	.2046
4.70	.002701	.01464	.1846	19.58	.4296	.1130	2256	88.58	.2178	12.28	73.97	40.56	25.61	.06917	.07809	4.893	.4199	.2044
4.71	.002669	.01451	.1839	19.75	.4289	.1121	2257	87.88	.2173	12.26	74.07	40.58	25.71	.06862	.07747	4.896	.4197	.2042
4.72	.002637	.01438	.1833	19.91	.4281	.1112	2258	87.19	.2168	12.23	74.18	40.60	25.82	.06809	.07685	4.900	.4196	.2041
4.73	.002605	.01426	.1827	20.07	.4274	.1103	2259	86.51	.2163	12.21	74.28	40.62	25.94	.06756	.07625	4.904	.4194	.2039
4.74	.002573	.01414	.1820	20.24	.4267	.1094	2260	85.83	.2158	12.18	74.38	40.64	26.05	.06703	.07564	4.908	.4192	.2038
4.75	.002543	.01402	.1814	20.41	.4259	.1086	2261	85.16	.2154	12.15	74.48	40.66	26.16	.06651	.07505	4.912	.4191	.2036
4.76	.002512	.01390	.1808	20.58	.4252	.1077	2261	84.50	.2149	12.13	74.58	40.68	26.27	.06599	.07445	4.915	.4189	.2034
4.77	.002482	.01378	.1802	20.75	.4245	.1069	2262	83.84	.2144	12.10	74.69	40.70	26.38	.06547	.07387	4.919	.4187	.2033
4.78	.002452	.01366	.1795	20.92	.4237	.1061	2263	83.18	.2139	12.08	74.79	40.72	26.49	.06496	.07329	4.923	.4186	.2031
4.79	.002423	.01354	.1789	21.09	.4230	.1052	2264	82.53	.2135	12.05	74.89	40.74	26.60	.06446	.07271	4.926	.4184	.2030
4.80	.002394	.01343	.1783	21.26	.4223	.1044	2265	81.89	.2130	12.02	74.99	40.76	26.71	.06396	.07214	4.930	.4183	.2028
4.81	.002366	.01331	.1777	21.44	.4216	.1036	2266	81.25	.2125	12.00	75.09	40.77	26.83	.06346	.07157	4.934	.4181	.2027
4.82	.002338	.01320	.1771	21.61	.4208	.1028	2267	80.62	.2121	11.97	75.19	40.79	26.94	.06297	.07101	4.937	.4179	.2025
4.83	.002310	.01309	.1765	21.79	.4201	.1020	2267	79.99	.2116	11.95	75.28	40.81	27.05	.06248	.07046	4.941	.4178	.2024
4.84	.002283	.01298	.1759	21.97	.4194	.1012	2268	79.37	.2112	11.92	75.38	40.83	27.16	.06200	.06991	4.945	.4176	.2022
4.85	.002255	.01287	.1753	22.15	.4187	.1004	2269	78.76	.2107	11.90	75.48	40.85	27.28	.06152	.06936	4.948	.4175	.2021
4.86	.002229	.01276	.1747	22.33	.4180	.09965	2270	78.15	.2103	11.87	75.58	40.87	27.39	.06105	.06882	4.952	.4173	.2019
4.87	.002202	.01265	.1741	22.51	.4173	.09888	2271	77.54	.2098	11.85	75.68	40.89	27.50	.06058	.06828	4.955	.4172	.2018
4.88	.002177	.01254	.1735	22.70	.4166	.09811	2271	76.94	.2094	11.82	75.78	40.91	27.62	.06011	.06775	4.959	.4170	.2017
4.89	.002151	.01244	.1729	22.88	.4159	.09736	2272	76.35	.2089	11.80	75.87	40.92	27.73	.05965	.06722	4.962	.4169	.2015
4.90	.002126	.01233	.1724	23.07	.4152	.09661	2273	75.76	.2085	11.78	75.97	40.94	27.85	.05919	.06670	4.966	.4167	.2014
4.91	.002101	.01223	.1718	23.25	.4145	.09586	2274	75.18	.2080	11.75	76.07	40.96	27.96	.05873	.06618	4.969	.4165	.2012
4.92	.002076	.01213	.1712	23.44	.4138	.09512	2275	74.60	.2076	11.73	76.16	40.98	28.07	.05828	.06567	4.973	.4164	.2011
4.93	.002052	.01202	.1706	23.63	.4131	.09439	2275	74.02	.2071	11.70	76.26	41.00	28.19	.05783	.06516	4.976	.4163	.2010
4.94	.002028	.01192	.1700	23.82	.4124	.09367	2276	73.46	.2067	11.68	76.35	41.01	28.30	.05739	.06465	4.980	.4161	.2008
4.95	.002004	.01182	.1695	24.02	.4117	.09295	2277	72.89	.2063	11.66	76.45	41.03	28.42	.05695	.06415	4.983	.4160	.2007
4.96	.001981	.01173	.1689	24.21	.4110	.09223	2278	72.33	.2058	11.63	76.54	41.05	28.54	.05652	.06366	4.987	.4158	.2005
4.97	.001957	.01163	.1683	24.41	.4103	.09153	2279	71.78	.2054	11.61	76.64	41.07	28.65	.05608	.06317	4.990	.4157	.2004
4.98	.001935	.01153	.1678	24.60	.4096	.09083	2279	71.23	.2050	11.58	76.73	41.08	28.77	.05566	.06268	4.993	.4155	.2003
4.99	.001912	.01144	.1672	24.80	.4089	.09013	2280	70.68	.2046	11.56	76.83	41.10	28.88	.05523	.06220	4.997	.4154	.2001
5.00	.001890	.01134	.1667	25.00	.4082	.08944	2281	70.14	.2041	11.54	76.92	41.12	29.00	.05481	.06172	5.000	.4152	.2000
5.01	.001868	.01125	.1661	25.20	.4076	.08876	2282	69.61	.2037	11.51	77.01	41.14	29.12	.05439	.06124	5.003	.4151	.1999
5.02	.001847	.01115	.1656	25.40	.4069	.08808	2282	69.08	.2033	11.49	77.11	41.15	29.23	.05398	.06077	5.007	.4149	.1997
5.03	.001825	.01106	.1650	25.61	.4062	.08741	2283	68.55	.2029	11.47	77.20	41.17	29.35	.05357	.06030	5.010	.4148	.1996
5.04	.001804	.01097	.1645	25.81	.4055	.08675	2284	68.03	.2024	11.44	77.29	41.18	29.47	.05316	.05984	5.013	.4147	.1995

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
5.05	0.001783	0.01088	0.1639	26.02	0.4049	0.08609	2285	67.51	0.2020	11.42	77.38	41.20	29.59	0.05276	0.05938	5.016	0.4145	0.1993
5.06	.001763	.01079	.1634	26.22	.4042	.08543	2285	67.00	.2016	11.40	77.48	41.22	29.70	.05236	.05893	5.020	.4144	.1992
5.07	.001742	.01070	.1628	26.43	.4035	.08478	2286	66.49	.2012	11.38	77.57	41.23	29.82	.05196	.05848	5.023	.4142	.1991
5.08	.001722	.01061	.1623	26.64	.4029	.08414	2287	65.99	.2008	11.35	77.66	41.25	29.94	.05157	.05803	5.026	.4141	.1990
5.09	.001703	.01053	.1618	26.86	.4022	.08350	2288	65.49	.2004	11.33	77.75	41.27	30.06	.05118	.05759	5.029	.4140	.1988
5.10	.001683	.01044	.1612	27.07	.4015	.08287	2288	64.99	.2000	11.31	77.84	41.28	30.18	.05080	.05715	5.033	.4138	.1987
5.11	.001664	.01035	.1607	27.28	.4009	.08225	2289	64.50	.1996	11.29	77.93	41.30	30.30	.05041	.05672	5.036	.4137	.1986
5.12	.001645	.01027	.1602	27.50	.4002	.08163	2290	64.01	.1991	11.26	78.02	41.32	30.42	.05003	.05628	5.039	.4136	.1985
5.13	.001626	.01019	.1597	27.72	.3996	.08101	2290	63.53	.1987	11.24	78.11	41.33	30.54	.04966	.05586	5.042	.4134	.1983
5.14	.001608	.01010	.1591	27.94	.3989	.08040	2291	63.05	.1983	11.22	78.20	41.35	30.66	.04928	.05543	5.045	.4133	.1982
5.15	.001589	.01002	.1586	28.16	.3983	.07979	2292	62.58	.1979	11.20	78.29	41.36	30.78	.04891	.05501	5.048	.4132	.1981
5.16	.001571	.009939	.1581	28.38	.3976	.07919	2293	62.11	.1975	11.17	78.38	41.38	30.90	.04855	.05460	5.051	.4130	.1980
5.17	.001553	.009858	.1576	28.60	.3970	.07860	2293	61.64	.1971	11.15	78.47	41.39	31.02	.04818	.05418	5.054	.4129	.1978
5.18	.001536	.009778	.1571	28.83	.3963	.07801	2294	61.18	.1968	11.13	78.56	41.41	31.14	.04782	.05377	5.058	.4128	.1977
5.19	.001518	.009699	.1566	29.06	.3957	.07742	2295	60.72	.1964	11.11	78.64	41.43	31.26	.04747	.05337	5.061	.4126	.1976
5.20	.001501	.009620	.1561	29.28	.3950	.07684	2295	60.26	.1960	11.09	78.73	41.44	31.38	.04711	.05297	5.064	.4125	.1975
5.21	.001484	.009543	.1555	29.51	.3944	.07627	2296	59.81	.1956	11.07	78.82	41.46	31.50	.04676	.05257	5.067	.4124	.1974
5.22	.001468	.009466	.1550	29.74	.3938	.07570	2297	59.37	.1952	11.04	78.91	41.47	31.62	.04641	.05217	5.070	.4123	.1972
5.23	.001451	.009389	.1545	29.98	.3931	.07513	2297	58.92	.1948	11.02	78.99	41.49	31.75	.04607	.05178	5.073	.4121	.1971
5.24	.001435	.009314	.1540	30.21	.3925	.07457	2298	58.48	.1944	11.00	79.08	41.50	31.87	.04572	.05139	5.076	.4120	.1970
5.25	.001419	.009239	.1536	30.45	.3919	.07402	2299	58.05	.1940	10.98	79.17	41.52	31.99	.04538	.05100	5.079	.4119	.1969
5.26	.001403	.009165	.1531	30.68	.3912	.07347	2299	57.61	.1936	10.96	79.25	41.53	32.11	.04505	.05062	5.082	.4118	.1968
5.27	.001387	.009092	.1526	30.92	.3906	.07292	2300	57.19	.1933	10.94	79.34	41.55	32.24	.04471	.05024	5.085	.4116	.1967
5.28	.001372	.009019	.1521	31.16	.3900	.07238	2301	56.76	.1929	10.92	79.43	41.56	32.36	.04438	.04987	5.088	.4115	.1966
5.29	.001356	.008947	.1516	31.41	.3893	.07184	2301	56.34	.1925	10.90	79.51	41.58	32.48	.04405	.04950	5.090	.4114	.1964
5.30	.001341	.008875	.1511	31.65	.3887	.07131	2302	55.92	.1921	10.88	79.60	41.59	32.61	.04373	.04913	5.093	.4113	.1963
5.31	.001326	.008805	.1506	31.89	.3881	.07078	2303	55.51	.1918	10.86	79.68	41.60	32.73	.04340	.04876	5.096	.4112	.1962
5.32	.001311	.008734	.1501	32.14	.3875	.07026	2303	55.10	.1914	10.83	79.77	41.62	32.85	.04308	.04840	5.099	.4110	.1961
5.33	.001297	.008665	.1497	32.39	.3869	.06974	2304	54.69	.1910	10.81	79.85	41.63	32.98	.04277	.04804	5.102	.4109	.1960
5.34	.001282	.008596	.1492	32.64	.3862	.06922	2305	54.29	.1906	10.79	79.93	41.65	33.10	.04245	.04768	5.105	.4108	.1959
5.35	.001268	.008528	.1487	32.89	.3856	.06871	2305	53.89	.1903	10.77	80.02	41.66	33.23	.04214	.04733	5.108	.4107	.1958
5.36	.001254	.008461	.1482	33.14	.3850	.06821	2306	53.49	.1899	10.75	80.10	41.68	33.35	.04183	.04697	5.111	.4106	.1957
5.37	.001240	.008394	.1478	33.40	.3844	.06770	2307	53.10	.1895	10.73	80.18	41.69	33.48	.04152	.04663	5.113	.4104	.1956
5.38	.001227	.008327	.1473	33.66	.3838	.06721	2307	52.70	.1892	10.71	80.27	41.70	33.60	.04122	.04628	5.116	.4103	.1955
5.39	.001213	.008262	.1468	33.91	.3832	.06671	2308	52.32	.1888	10.69	80.35	41.72	33.73	.04091	.04594	5.119	.4102	.1954
5.40	.001200	.008197	.1464	34.17	.3826	.06622	2308	51.93	.1884	10.67	80.43	41.73	33.85	.04061	.04560	5.122	.4101	.1952
5.41	.001187	.008132	.1459	34.44	.3820	.06574	2309	51.55	.1881	10.65	80.52	41.74	33.98	.04032	.04526	5.125	.4100	.1951
5.42	.001174	.008068	.1454	34.70	.3814	.06526	2310	51.18	.1877	10.63	80.60	41.76	34.11	.04002	.04493	5.127	.4099	.1950
5.43	.001161	.008005	.1450	34.97	.3808	.06478	2310	50.80	.1874	10.61	80.68	41.77	34.23	.03973	.04460	5.130	.4098	.1949
5.44	.001148	.007942	.1445	35.23	.3802	.06430	2311	50.43	.1870	10.59	80.76	41.79	34.36	.03944	.04427	5.133	.4096	.1948
5.45	.001135	.007880	.1441	35.50	.3796	.06384	2312	50.06	.1867	10.57	80.84	41.80	34.49	.03915	.04395	5.136	.4095	.1947
5.46	.001123	.007818	.1436	35.77	.3790	.06337	2312	49.70	.1863	10.55	80.92	41.81	34.61	.03887	.04362	5.138	.4094	.1946
5.47	.001111	.007757	.1432	36.04	.3784	.06291	2313	49.33	.1859	10.53	81.00	41.82	34.74	.03859	.04330	5.141	.4093	.1945
5.48	.001099	.007697	.1427	36.32	.3778	.06245	2313	48.98	.1856	10.51	81.08	41.84	34.87	.03831	.04299	5.144	.4092	.1944
5.49	.001087	.007637	.1423	36.59	.3772	.06200	2314	48.62	.1852	10.50	81.16	41.85	35.00	.03803	.04267	5.146	.4091	.1943

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2 - 1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
5.50	0.001075	0.007578	0.1418	36.87	0.3766	0.06155	2315	48.27	0.1849	10.48	81.24	41.86	35.13	0.03775	0.04236	5.149	0.4090	0.1942
5.51	.001063	.007519	.1414	37.15	.3760	.06110	2315	47.92	.1846	10.46	81.32	41.88	35.25	.03748	.04205	5.152	.4089	.1941
5.52	.001052	.007460	.1410	37.43	.3754	.06066	2316	47.57	.1842	10.44	81.40	41.89	35.38	.03721	.04175	5.154	.4088	.1940
5.53	.001040	.007403	.1405	37.71	.3749	.06022	2316	47.22	.1839	10.42	81.48	41.90	35.51	.03694	.04144	5.157	.4086	.1939
5.54	.001029	.007345	.1401	38.00	.3743	.05978	2317	46.88	.1835	10.40	81.56	41.92	35.64	.03667	.04114	5.159	.4085	.1938
5.55	.001018	.007289	.1397	38.28	.3737	.05935	2317	46.54	.1832	10.38	81.64	41.93	35.77	.03641	.04084	5.162	.4084	.1937
5.56	.001007	.007232	.1392	38.57	.3731	.05892	2318	46.21	.1828	10.36	81.72	41.94	35.90	.03615	.04054	5.165	.4083	.1936
5.57	.0009961	.007177	.1388	38.86	.3725	.05850	2319	45.87	.1825	10.34	81.80	41.95	36.03	.03589	.04025	5.167	.4082	.1935
5.58	.0009853	.007121	.1384	39.15	.3720	.05808	2319	45.54	.1822	10.32	81.88	41.97	36.16	.03563	.03996	5.170	.4081	.1934
5.59	.0009748	.007067	.1379	39.44	.3714	.05766	2320	45.22	.1818	10.31	81.95	41.98	36.29	.03537	.03967	5.172	.4080	.1933
5.60	.0009643	.007012	.1375	39.74	.3708	.05724	2320	44.89	.1815	10.29	82.03	41.99	36.42	.03512	.03938	5.175	.4079	.1932
5.61	.0009540	.006959	.1371	40.04	.3703	.05683	2321	44.57	.1812	10.27	82.11	42.00	36.55	.03487	.03910	5.177	.4078	.1931
5.62	.0009438	.006905	.1367	40.34	.3697	.05642	2322	44.25	.1808	10.25	82.19	42.02	36.68	.03462	.03882	5.180	.4077	.1931
5.63	.0009337	.006853	.1363	40.64	.3691	.05602	2322	43.93	.1805	10.23	82.26	42.03	36.81	.03437	.03854	5.182	.4076	.1930
5.64	.0009237	.006800	.1358	40.94	.3686	.05562	2323	43.62	.1802	10.21	82.34	42.04	36.94	.03413	.03826	5.185	.4075	.1929
5.65	.0009139	.006748	.1354	41.25	.3680	.05522	2323	43.31	.1798	10.19	82.42	42.05	37.08	.03388	.03798	5.187	.4074	.1928
5.66	.0009041	.006697	.1350	41.55	.3674	.05483	2324	43.00	.1795	10.18	82.49	42.06	37.21	.03364	.03771	5.190	.4073	.1927
5.67	.0008945	.006646	.1346	41.86	.3669	.05444	2324	42.69	.1792	10.16	82.57	42.08	37.34	.03340	.03744	5.192	.4072	.1926
5.68	.0008850	.006596	.1342	42.17	.3663	.05405	2325	42.39	.1789	10.14	82.64	42.09	37.47	.03316	.03717	5.195	.4071	.1925
5.69	.0008756	.006543	.1338	42.48	.3658	.05366	2325	42.08	.1785	10.12	82.72	42.10	37.61	.03293	.03691	5.197	.4070	.1924
5.70	.0008663	.006496	.1334	42.80	.3652	.05328	2326	41.78	.1782	10.10	82.80	42.11	37.74	.03269	.03664	5.200	.4069	.1923
5.71	.0008572	.006447	.1330	43.11	.3646	.05290	2326	41.49	.1779	10.09	82.87	42.12	37.87	.03246	.03638	5.202	.4068	.1922
5.72	.0008481	.006398	.1326	43.43	.3641	.05253	2327	41.19	.1776	10.07	82.95	42.14	38.00	.03223	.03612	5.205	.4067	.1921
5.73	.0008392	.006350	.1322	43.75	.3635	.05215	2328	40.90	.1772	10.05	83.02	42.15	38.14	.03200	.03586	5.207	.4066	.1920
5.74	.0008303	.006302	.1318	44.07	.3630	.05179	2328	40.61	.1769	10.03	83.09	42.16	38.27	.03178	.03561	5.209	.4065	.1920
5.75	.0008216	.006254	.1314	44.40	.3624	.05142	2329	40.32	.1766	10.02	83.17	42.17	38.41	.03155	.03536	5.212	.4064	.1919
5.76	.0008130	.006207	.1310	44.72	.3619	.05106	2329	40.04	.1763	10.00	83.24	42.18	38.54	.03133	.03510	5.214	.4063	.1918
5.77	.0008044	.006161	.1306	45.05	.3613	.05070	2330	39.76	.1760	9.98	83.32	42.19	38.68	.03111	.03486	5.217	.4062	.1917
5.78	.0007960	.006114	.1302	45.38	.3608	.05034	2330	39.48	.1757	9.96	83.39	42.20	38.81	.03089	.03461	5.219	.4061	.1916
5.79	.0007876	.006069	.1298	45.72	.3603	.04998	2331	39.20	.1753	9.95	83.46	42.22	38.94	.03067	.03436	5.221	.4060	.1915
5.80	.0007794	.006023	.1294	46.05	.3597	.04963	2331	38.92	.1750	9.93	83.54	42.23	39.08	.03046	.03412	5.224	.4059	.1914
5.81	.0007713	.005978	.1290	46.39	.3592	.04928	2332	38.63	.1747	9.91	83.61	42.24	39.22	.03025	.03388	5.226	.4059	.1914
5.82	.0007632	.005934	.1286	46.72	.3586	.04894	2332	38.38	.1744	9.89	83.68	42.25	39.35	.03003	.03364	5.228	.4058	.1913
5.83	.0007553	.005889	.1282	47.07	.3581	.04859	2333	38.11	.1741	9.88	83.76	42.26	39.49	.02982	.03340	5.231	.4057	.1912
5.84	.0007474	.005846	.1279	47.41	.3576	.04825	2333	37.84	.1738	9.86	83.83	42.27	39.62	.02961	.03317	5.233	.4056	.1911
5.85	.0007396	.005802	.1275	47.75	.3570	.04791	2334	37.58	.1735	9.84	83.90	42.28	39.76	.02941	.03293	5.235	.4055	.1910
5.86	.0007320	.005759	.1271	48.10	.3565	.04758	2334	37.31	.1732	9.83	83.97	42.29	39.90	.02920	.03270	5.237	.4054	.1909
5.87	.0007244	.005716	.1267	48.45	.3560	.04725	2335	37.05	.1729	9.81	84.04	42.30	40.03	.02900	.03247	5.240	.4053	.1909
5.88	.0007169	.005674	.1263	48.80	.3554	.04692	2335	36.79	.1726	9.79	84.11	42.31	40.17	.02880	.03225	5.242	.4052	.1908
5.89	.0007095	.005632	.1260	49.15	.3549	.04659	2336	36.54	.1723	9.78	84.19	42.32	40.31	.02860	.03202	5.244	.4051	.1907
5.90	.0007021	.005590	.1256	49.51	.3544	.04627	2336	36.28	.1720	9.76	84.26	42.34	40.45	.02840	.03180	5.246	.4050	.1906
5.91	.0006949	.005549	.1252	49.86	.3539	.04594	2337	36.03	.1717	9.74	84.33	42.35	40.58	.02820	.03157	5.249	.4049	.1905
5.92	.0006877	.005508	.1249	50.22	.3533	.04562	2337	35.78	.1714	9.73	84.40	42.36	40.72	.02801	.03135	5.251	.4049	.1904
5.93	.0006807	.005468	.1245	50.59	.3528	.04531	2338	35.53	.1711	9.71	84.47	42.37	40.86	.02781	.03113	5.253	.4048	.1904
5.94	.0006737	.005428	.1241	50.95	.3523	.04499	2338	35.29	.1708	9.69	84.54	42.38	41.00	.02762	.03092	5.255	.4047	.1903

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
5.95	0.0006668	0.005388	0.1238	51.32	0.3518	0.04468	2339	35.04	0.1705	9.68	84.61	42.39	41.14	0.02743	0.03070	5.257	0.4046	0.1902
5.96	.0006599	.005348	.1234	51.68	.3513	.04437	2339	34.80	.1702	9.66	84.68	42.40	41.28	.02724	.03049	5.260	.4045	.1901
5.97	.0006532	.005309	.1230	52.05	.3508	.04407	2340	34.56	.1699	9.64	84.75	42.41	41.41	.02705	.03028	5.262	.4044	.1900
5.98	.0006465	.005270	.1227	52.43	.3502	.04376	2340	34.32	.1696	9.63	84.82	42.42	41.55	.02686	.03007	5.264	.4043	.1900
5.99	.0006399	.005232	.1223	52.80	.3497	.04346	2341	34.08	.1693	9.61	84.89	42.43	41.69	.02668	.02986	5.266	.4042	.1899
6.00	.0006334	.005194	.1220	53.18	.3492	.04316	2341	33.85	.1690	9.59	84.96	42.44	41.83	.02650	.02965	5.268	.4042	.1898
6.01	.0006269	.005156	.1216	53.56	.3487	.04286	2342	33.61	.1687	9.58	85.02	42.45	41.97	.02631	.02945	5.270	.4041	.1897
6.02	.0006205	.005118	.1212	53.94	.3482	.04257	2342	33.38	.1685	9.56	85.09	42.46	42.11	.02613	.02924	5.273	.4040	.1897
6.03	.0006142	.005081	.1209	54.32	.3477	.04228	2343	33.15	.1682	9.55	85.16	42.47	42.25	.02595	.02904	5.275	.4039	.1896
6.04	.0006080	.005044	.1205	54.71	.3472	.04199	2343	32.93	.1679	9.53	85.23	42.48	42.40	.02578	.02884	5.277	.4038	.1895
6.05	.0006018	.005008	.1202	55.10	.3467	.04170	2344	32.70	.1676	9.51	85.30	42.49	42.54	.02560	.02864	5.279	.4037	.1894
6.06	.0005957	.004971	.1198	55.49	.3462	.04141	2344	32.48	.1673	9.50	85.37	42.50	42.68	.02542	.02844	5.281	.4037	.1894
6.07	.0005897	.004935	.1195	55.88	.3457	.04113	2345	32.26	.1670	9.48	85.43	42.51	42.82	.02525	.02825	5.283	.4036	.1893
6.08	.0005838	.004900	.1191	56.28	.3452	.04085	2345	32.03	.1667	9.47	85.50	42.52	42.96	.02508	.02806	5.285	.4035	.1892
6.09	.0005779	.004864	.1188	56.68	.3447	.04057	2345	31.82	.1665	9.45	85.57	42.53	43.10	.02491	.02786	5.287	.4034	.1891
6.10	.0005721	.004829	.1185	57.08	.3442	.04029	2346	31.60	.1662	9.44	85.63	42.54	43.25	.02474	.02767	5.289	.4033	.1890
6.11	.0005663	.004795	.1181	57.48	.3437	.04002	2346	31.38	.1659	9.42	85.70	42.55	43.39	.02457	.02748	5.291	.4033	.1890
6.12	.0005606	.004760	.1178	57.88	.3432	.03975	2347	31.17	.1656	9.40	85.77	42.56	43.53	.02440	.02730	5.293	.4032	.1889
6.13	.0005550	.004726	.1174	58.29	.3427	.03948	2347	30.96	.1653	9.39	85.83	42.57	43.67	.02424	.02711	5.295	.4031	.1888
6.14	.0005494	.004692	.1171	58.70	.3422	.03921	2348	30.75	.1651	9.37	85.90	42.58	43.82	.02407	.02692	5.297	.4030	.1888
6.15	.0005439	.004658	.1168	59.11	.3417	.03894	2348	30.54	.1648	9.36	85.97	42.59	43.96	.02391	.02674	5.299	.4029	.1887
6.16	.0005385	.004625	.1164	59.53	.3412	.03868	2349	30.33	.1645	9.34	86.03	42.60	44.10	.02375	.02656	5.301	.4029	.1886
6.17	.0005331	.004592	.1161	59.94	.3407	.03842	2349	30.13	.1642	9.33	86.10	42.61	44.25	.02359	.02638	5.303	.4028	.1886
6.18	.0005278	.004559	.1158	60.36	.3402	.03816	2349	29.92	.1640	9.31	86.16	42.61	44.39	.02343	.02620	5.305	.4027	.1885
6.19	.0005225	.004527	.1154	60.79	.3398	.03790	2350	29.72	.1637	9.30	86.23	42.62	44.54	.02327	.02603	5.307	.4026	.1884
6.20	.0005173	.004495	.1151	61.21	.3393	.03764	2350	29.52	.1634	9.28	86.29	42.63	44.68	.02312	.02584	5.309	.4025	.1883
6.21	.0005122	.004463	.1148	61.64	.3388	.03739	2351	29.32	.1632	9.27	86.36	42.64	44.82	.02296	.02567	5.311	.4025	.1883
6.22	.0005071	.004431	.1144	62.07	.3383	.03714	2351	29.13	.1629	9.25	86.42	42.65	44.97	.02281	.02550	5.313	.4024	.1882
6.23	.0005021	.004400	.1141	62.50	.3378	.03689	2352	28.93	.1626	9.24	86.49	42.66	45.12	.02265	.02532	5.315	.4023	.1881
6.24	.0004971	.004369	.1138	62.93	.3373	.03664	2352	28.74	.1624	9.22	86.55	42.67	45.26	.02250	.02515	5.317	.4022	.1881
6.25	.0004922	.004338	.1135	63.37	.3369	.03640	2352	28.54	.1621	9.21	86.62	42.68	45.41	.02235	.02498	5.319	.4022	.1880
6.26	.0004874	.004307	.1132	63.81	.3364	.03615	2353	28.35	.1618	9.19	86.68	42.69	45.55	.02220	.02482	5.321	.4021	.1879
6.27	.0004825	.004277	.1128	64.25	.3359	.03591	2353	28.16	.1616	9.18	86.75	42.70	45.70	.02205	.02465	5.323	.4020	.1879
6.28	.0004778	.004246	.1125	64.69	.3354	.03567	2354	27.97	.1613	9.16	86.81	42.71	45.84	.02190	.02448	5.325	.4019	.1878
6.29	.0004731	.004217	.1122	65.14	.3350	.03543	2354	27.79	.1610	9.15	86.87	42.71	45.99	.02176	.02432	5.327	.4019	.1877
6.30	.0004684	.004187	.1119	65.59	.3345	.03519	2355	27.60	.1608	9.13	86.94	42.72	46.14	.02161	.02416	5.329	.4018	.1877
6.31	.0004638	.004158	.1116	66.04	.3340	.03496	2355	27.42	.1605	9.12	87.00	42.73	46.29	.02147	.02399	5.331	.4017	.1876
6.32	.0004593	.004128	.1113	66.50	.3335	.03472	2355	27.23	.1602	9.10	87.06	42.74	46.43	.02133	.02383	5.332	.4016	.1875
6.33	.0004548	.004100	.1109	66.95	.3331	.03450	2356	27.05	.1600	9.09	87.13	42.75	46.58	.02119	.02367	5.334	.4016	.1875
6.34	.0004504	.004071	.1106	67.41	.3326	.03427	2356	26.87	.1597	9.08	87.19	42.76	46.73	.02104	.02352	5.336	.4015	.1874
6.35	.0004460	.004042	.1103	67.88	.3321	.03404	2357	26.69	.1595	9.06	87.25	42.77	46.88	.02090	.02336	5.338	.4014	.1873
6.36	.0004416	.004014	.1100	68.34	.3317	.03381	2357	26.52	.1592	9.05	87.31	42.78	47.02	.02077	.02320	5.340	.4014	.1873
6.37	.0004373	.003986	.1097	68.81	.3312	.03359	2357	26.34	.1590	9.03	87.38	42.78	47.17	.02063	.02305	5.342	.4013	.1872
6.38	.0004331	.003958	.1094	69.28	.3308	.03336	2358	26.17	.1587	9.02	87.44	42.79	47.32	.02049	.02290	5.344	.4012	.1871
6.39	.0004288	.003931	.1091	69.75	.3303	.03315	2358	25.99	.1584	9.00	87.50	42.80	47.47	.02036	.02274	5.345	.4011	.1871

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
6.40	0.0004247	0.003904	0.1088	70.23	0.3298	0.03293	2359	25.82	0.1582	8.99	87.56	42.81	47.62	0.02022	0.02259	5.347	0.4011	0.1870
6.41	.0004206	.003877	.1085	70.57	.3294	.03271	2359	25.65	.1579	8.98	87.62	42.82	47.77	.02009	.02244	5.349	.4010	.1869
6.42	.0004165	.003850	.1082	71.19	.3289	.03249	2359	25.48	.1577	8.96	87.68	42.83	47.92	.01996	.02230	5.351	.4009	.1869
6.43	.0004125	.003823	.1079	71.67	.3285	.03228	2360	25.32	.1574	8.95	87.74	42.84	48.07	.01983	.02215	5.353	.4009	.1868
6.44	.0004085	.003797	.1076	72.16	.3280	.03207	2360	25.15	.1572	8.93	87.81	42.84	48.22	.01970	.02200	5.354	.4008	.1868
6.45	.0004045	.003771	.1073	72.65	.3276	.03186	2361	24.98	.1569	8.92	87.87	42.85	48.37	.01957	.02186	5.356	.4007	.1867
6.46	.0004006	.003745	.1070	73.14	.3271	.03165	2361	24.82	.1567	8.91	87.93	42.86	48.52	.01944	.02171	5.358	.4007	.1866
6.47	.0003968	.003719	.1067	73.63	.3266	.03144	2361	24.66	.1564	8.89	87.99	42.87	48.67	.01931	.02157	5.360	.4006	.1866
6.48	.0003930	.003693	.1064	74.13	.3262	.03124	2362	24.50	.1562	8.88	88.05	42.88	48.82	.01919	.02143	5.362	.4005	.1865
6.49	.0003892	.003668	.1061	74.63	.3257	.03103	2362	24.34	.1559	8.86	88.11	42.88	48.97	.01906	.02129	5.363	.4004	.1865
6.50	.0003855	.003643	.1058	75.13	.3253	.03083	2363	24.18	.1557	8.85	88.17	42.89	49.13	.01894	.02115	5.365	.4004	.1864
6.51	.0003818	.003618	.1055	75.65	.3249	.03063	2363	24.02	.1555	8.84	88.23	42.90	49.28	.01881	.02101	5.367	.4003	.1863
6.52	.0003781	.003593	.1052	76.15	.3244	.03043	2363	23.86	.1552	8.82	88.29	42.91	49.43	.01869	.02087	5.369	.4002	.1863
6.53	.0003745	.003568	.1050	76.66	.3240	.03023	2364	23.71	.1550	8.81	88.35	42.92	49.58	.01857	.02073	5.370	.4002	.1862
6.54	.0003709	.003544	.1047	77.18	.3235	.03003	2364	23.55	.1547	8.80	88.41	42.92	49.73	.01845	.02060	5.372	.4001	.1861
6.55	.0003674	.003520	.1044	77.69	.3231	.02984	2365	23.40	.1545	8.78	88.47	42.93	49.89	.01833	.02047	5.374	.4000	.1861
6.56	.0003639	.003496	.1041	78.21	.3226	.02964	2365	23.25	.1542	8.77	88.52	42.94	50.04	.01821	.02033	5.375	.4000	.1860
6.57	.0003604	.003472	.1038	78.74	.3222	.02945	2365	23.10	.1540	8.75	88.58	42.95	50.19	.01809	.02020	5.377	.3999	.1860
6.58	.0003570	.003449	.1035	79.26	.3218	.02926	2366	22.95	.1538	8.74	88.64	42.96	50.35	.01797	.02007	5.379	.3999	.1859
6.59	.0003536	.003425	.1032	79.79	.3213	.02907	2366	22.80	.1535	8.73	88.70	42.96	50.50	.01786	.01994	5.381	.3998	.1859
6.60	.0003503	.003402	.1030	80.32	.3209	.02888	2366	22.65	.1533	8.71	88.76	42.97	50.65	.01774	.01981	5.382	.3997	.1858
6.61	.0003470	.003379	.1027	80.86	.3204	.02870	2367	22.50	.1530	8.70	88.82	42.98	50.81	.01763	.01968	5.384	.3997	.1857
6.62	.0003437	.003356	.1024	81.40	.3200	.02851	2367	22.36	.1528	8.69	88.88	42.99	50.96	.01752	.01955	5.386	.3996	.1857
6.63	.0003404	.003333	.1021	81.94	.3196	.02833	2367	22.22	.1526	8.68	88.93	42.99	51.12	.01740	.01943	5.387	.3995	.1856
6.64	.0003372	.003311	.1019	82.48	.3191	.02815	2368	22.07	.1523	8.66	88.99	43.00	51.27	.01729	.01930	5.389	.3995	.1856
6.65	.0003341	.003289	.1016	83.03	.3187	.02796	2368	21.93	.1521	8.65	89.05	43.01	51.43	.01718	.01918	5.391	.3994	.1855
6.66	.0003309	.003267	.1013	83.58	.3183	.02778	2369	21.79	.1519	8.64	89.11	43.02	51.58	.01707	.01905	5.392	.3993	.1855
6.67	.0003278	.003245	.1010	84.13	.3179	.02761	2369	21.65	.1516	8.62	89.16	43.02	51.74	.01696	.01893	5.394	.3993	.1854
6.68	.0003247	.003223	.1008	84.68	.3174	.02743	2369	21.51	.1514	8.61	89.22	43.03	51.89	.01685	.01881	5.395	.3992	.1853
6.69	.0003217	.003201	.1005	85.24	.3170	.02725	2370	21.37	.1512	8.60	89.28	43.04	52.05	.01674	.01869	5.397	.3992	.1853
6.70	.0003187	.003180	.1002	85.80	.3166	.02708	2370	21.24	.1509	8.58	89.33	43.05	52.21	.01664	.01857	5.399	.3991	.1852
6.71	.0003157	.003158	.09997	86.37	.3162	.02691	2370	21.10	.1507	8.57	89.39	43.05	52.36	.01653	.01845	5.400	.3990	.1852
6.72	.0003127	.003137	.09968	86.94	.3157	.02673	2371	20.97	.1505	8.56	89.45	43.06	52.52	.01642	.01833	5.402	.3990	.1851
6.73	.0003098	.003116	.09942	87.51	.3153	.02656	2371	20.83	.1503	8.55	89.50	43.07	52.68	.01632	.01821	5.403	.3989	.1851
6.74	.0003069	.003096	.09915	88.08	.3149	.02639	2371	20.70	.1500	8.53	89.56	43.08	52.83	.01622	.01810	5.405	.3988	.1850
6.75	.0003041	.003075	.09889	88.66	.3145	.02623	2372	20.57	.1498	8.52	89.62	43.08	52.99	.01611	.01798	5.407	.3988	.1850
6.67	.0003013	.003055	.09862	89.24	.3140	.02606	2372	20.44	.1496	8.51	89.67	43.09	53.15	.01601	.01786	5.408	.3987	.1849
6.77	.0002985	.003034	.09836	89.82	.3136	.02589	2372	20.31	.1493	8.49	89.73	43.10	53.31	.01591	.01775	5.410	.3987	.1848
6.78	.0002957	.003014	.09810	90.41	.3132	.02573	2373	20.18	.1491	8.48	89.78	43.10	53.46	.01581	.01764	5.411	.3986	.1848
6.79	.0002930	.002994	.09784	91.00	.3128	.02557	2373	20.05	.1489	8.47	89.84	43.11	53.62	.01571	.01753	5.413	.3986	.1847
6.80	.0002902	.002974	.09758	91.59	.3124	.02540	2373	19.92	.1487	8.46	89.90	43.12	53.78	.01561	.01741	5.415	.3985	.1847
6.81	.0002876	.002955	.09732	92.19	.3120	.02524	2374	19.80	.1485	8.44	89.95	43.13	53.94	.01551	.01730	5.416	.3984	.1846
6.82	.0002849	.002935	.09706	92.79	.3116	.02508	2374	19.67	.1482	8.43	90.01	43.13	54.10	.01541	.01719	5.418	.3984	.1846
6.83	.0002823	.002916	.09681	93.39	.3111	.02493	2375	19.55	.1480	8.42	90.06	43.14	54.26	.01532	.01709	5.419	.3983	.1845
6.84	.0002797	.002897	.09655	94.00	.3107	.02477	2375	19.42	.1478	8.41	90.12	43.15	54.42	.01522	.01698	5.421	.3983	.1845

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
6.85	0.0002771	0.002878	0.09630	94.61	0.3103	0.02461	2375	19.30	0.1476	8.39	90.17	43.15	54.58	0.01512	0.01687	5.422	0.3982	0.1844
6.86	.0002746	.002859	.09604	95.22	.3099	.02446	2376	19.18	.1473	8.38	90.22	43.16	54.74	.01503	.01676	5.424	.3981	.1844
6.87	.0002720	.002840	.09579	95.83	.3095	.02430	2376	19.06	.1471	8.37	90.28	43.17	54.90	.01493	.01666	5.425	.3981	.1843
6.88	.0002696	.002821	.09554	96.45	.3091	.02415	2376	18.94	.1469	8.36	90.33	43.17	55.06	.01484	.01655	5.427	.3980	.1843
6.89	.0002671	.002803	.09529	97.08	.3087	.02400	2377	18.82	.1467	8.35	90.39	43.18	55.22	.01475	.01645	5.428	.3980	.1842
6.90	.0002646	.002785	.09504	97.70	.3083	.02385	2377	18.70	.1465	8.33	90.44	43.19	55.38	.01466	.01634	5.430	.3979	.1842
6.91	.0002622	.002766	.09479	98.33	.3079	.02370	2377	18.59	.1463	8.32	90.49	43.19	55.54	.01456	.01624	5.431	.3979	.1841
6.92	.0002598	.002748	.09454	98.96	.3075	.02355	2377	18.47	.1460	8.31	90.55	43.20	55.70	.01447	.01614	5.433	.3978	.1841
6.93	.0002575	.002730	.09430	99.60	.3071	.02341	2378	18.36	.1458	8.30	90.60	43.21	55.86	.01438	.01604	5.434	.3977	.1840
6.94	.0002551	.002713	.09405	100.2	.3067	.02326	2378	18.24	.1456	8.28	90.66	43.22	56.02	.01429	.01594	5.436	.3977	.1840
6.95	.0002528	.002695	.09380	100.9	.3063	.02311	2378	18.13	.1454	8.27	90.71	43.22	56.19	.01420	.01584	5.437	.3976	.1839
6.96	.0002505	.002677	.09356	101.5	.3059	.02297	2379	18.01	.1452	8.26	90.76	43.23	56.35	.01412	.01574	5.439	.3976	.1839
6.97	.0002482	.002660	.09332	102.2	.3055	.02283	2379	17.90	.1450	8.25	90.81	43.24	56.51	.01403	.01564	5.440	.3975	.1838
6.98	.0002460	.002643	.09307	102.8	.3051	.02269	2379	17.79	.1448	8.24	90.87	43.24	56.67	.01394	.01554	5.442	.3975	.1838
6.99	.0002438	.002626	.09283	103.5	.3047	.02254	2380	17.68	.1445	8.23	90.92	43.25	56.84	.01385	.01545	5.443	.3974	.1837
7.00	.0002416	.002609	.09259	104.1	.3043	.02241	2380	17.57	.1443	8.21	90.97	43.25	57.00	.01377	.01535	5.444	.3974	.1837
7.01	.0002394	.002592	.09235	104.8	.3039	.02227	2380	17.46	.1441	8.20	91.03	43.26	57.16	.01368	.01526	5.446	.3973	.1836
7.02	.0002372	.002575	.09211	105.5	.3035	.02213	2381	17.35	.1439	8.19	91.08	43.27	57.33	.01360	.01516	5.447	.3973	.1836
7.03	.0002351	.002559	.09188	106.1	.3031	.02199	2381	17.25	.1437	8.18	91.13	43.27	57.49	.01351	.01507	5.449	.3972	.1835
7.04	.0002330	.002542	.09164	106.8	.3027	.02186	2381	17.14	.1435	8.17	91.18	43.28	57.66	.01343	.01497	5.450	.3971	.1835
7.05	.0002309	.002526	.09140	107.5	.3023	.02172	2382	17.03	.1433	8.15	91.23	43.29	57.82	.01335	.01488	5.452	.3971	.1834
7.06	.0002288	.002510	.09117	108.2	.3019	.02159	2382	16.93	.1431	8.14	91.29	43.29	57.98	.01327	.01479	5.453	.3970	.1834
7.07	.0002267	.002494	.09093	108.9	.3016	.02145	2382	16.83	.1429	8.13	91.34	43.30	58.15	.01319	.01470	5.454	.3970	.1833
7.08	.0002247	.002478	.09070	109.5	.3012	.02132	2383	16.72	.1427	8.12	91.39	43.31	58.31	.01310	.01461	5.456	.3969	.1833
7.09	.0002227	.002462	.09047	110.2	.3008	.02119	2383	16.62	.1425	8.11	91.44	43.31	58.48	.01302	.01452	5.457	.3969	.1832
7.10	.0002207	.002446	.09024	110.9	.3004	.02106	2383	16.52	.1423	8.10	91.49	43.32	58.65	.01294	.01443	5.459	.3968	.1832
7.11	.0002187	.002430	.09001	111.6	.3000	.02093	2383	16.42	.1421	8.09	91.54	43.32	58.81	.01286	.01434	5.460	.3968	.1832
7.12	.0002168	.002415	.08978	112.3	.2996	.02080	2384	16.32	.1419	8.07	91.59	43.33	58.98	.01279	.01425	5.461	.3967	.1831
7.13	.0002149	.002400	.08955	113.0	.2992	.02068	2384	16.22	.1417	8.06	91.64	43.34	59.14	.01271	.01416	5.463	.3967	.1831
7.14	.0002130	.002384	.08932	113.7	.2989	.02055	2384	16.12	.1415	8.05	91.70	43.34	59.31	.01263	.01408	5.464	.3966	.1830
7.15	.0002111	.002369	.08909	114.5	.2985	.02042	2385	16.02	.1412	8.04	91.75	43.35	59.48	.01255	.01399	5.465	.3966	.1830
7.16	.0002092	.002354	.08886	115.2	.2981	.02030	2385	15.92	.1410	8.03	91.80	43.36	59.64	.01248	.01390	5.467	.3965	.1829
7.17	.0002073	.002339	.08864	115.9	.2977	.02018	2385	15.82	.1408	8.02	91.85	43.36	59.81	.01240	.01382	5.468	.3965	.1829
7.18	.0002055	.002324	.08841	116.6	.2973	.02005	2386	15.73	.1406	8.01	91.90	43.37	59.98	.01233	.01374	5.470	.3964	.1828
7.19	.0002037	.002310	.08819	117.3	.2970	.01993	2386	15.63	.1404	7.99	91.95	43.37	60.15	.01225	.01365	5.471	.3964	.1828
7.20	.0002019	.002295	.08797	118.1	.2966	.01981	2386	15.54	.1402	7.98	92.00	43.38	60.31	.01218	.01357	5.472	.3963	.1827
7.21	.0002001	.002281	.08774	118.8	.2962	.01969	2386	15.44	.1400	7.97	92.05	43.39	60.48	.01210	.01349	5.474	.3963	.1827
7.22	.0001983	.002266	.08752	119.6	.2958	.01957	2387	15.35	.1399	7.96	92.10	43.39	60.65	.01203	.01340	5.475	.3962	.1827
7.23	.0001966	.002252	.08730	120.3	.2955	.01945	2387	15.26	.1397	7.95	92.15	43.40	60.82	.01196	.01332	5.476	.3962	.1826
7.24	.0001949	.002238	.08708	121.0	.2951	.01934	2387	15.16	.1395	7.94	92.20	43.40	60.99	.01188	.01324	5.478	.3961	.1826
7.25	.0001932	.002224	.08686	121.8	.2947	.01922	2388	15.07	.1393	7.93	92.24	43.41	61.16	.01181	.01316	5.479	.3961	.1825
7.26	.0001915	.002210	.08664	122.5	.2944	.01910	2388	14.98	.1391	7.92	92.29	43.42	61.33	.01174	.01308	5.480	.3960	.1825
7.27	.0001898	.002196	.08643	123.3	.2940	.01899	2388	14.89	.1389	7.91	92.34	43.42	61.50	.01167	.01300	5.481	.3960	.1824
7.28	.0001881	.002182	.08621	124.1	.2936	.01887	2388	14.80	.1387	7.90	92.39	43.43	61.66	.01160	.01292	5.483	.3959	.1824
7.29	.0001865	.002169	.08599	124.8	.2932	.01876	2389	14.71	.1385	7.88	92.44	43.43	61.83	.01153	.01285	5.484	.3959	.1823

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{p_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
7.30	0.0001848	0.002155	0.08578	125.6	0.2929	0.01865	2389	14.62	0.1383	7.87	92.49	43.44	62.01	0.01146	0.01277	5.485	0.3958	0.1823
7.31	.0001832	.002142	.08556	126.4	.2925	.01853	2389	14.54	.1381	7.86	92.54	43.44	62.18	.01139	.01269	5.487	.3958	.1823
7.32	.0001816	.002128	.08535	127.2	.2921	.01842	2390	14.45	.1379	7.85	92.59	43.45	62.35	.01132	.01262	5.488	.3957	.1822
7.33	.0001801	.002115	.08514	127.9	.2918	.01831	2390	14.36	.1377	7.84	92.64	43.46	62.52	.01126	.01254	5.489	.3957	.1822
7.34	.0001785	.002102	.08492	128.7	.2914	.01820	2390	14.28	.1375	7.83	92.68	43.46	62.69	.01119	.01246	5.490	.3956	.1821
7.35	.0001769	.002089	.08471	129.5	.2911	.01809	2390	14.19	.1373	7.82	92.73	43.47	62.86	.01112	.01239	5.492	.3956	.1821
7.36	.0001754	.002076	.08450	130.3	.2907	.01799	2391	14.11	.1371	7.81	92.78	43.47	63.03	.01106	.01232	5.493	.3955	.1821
7.37	.0001739	.002063	.08429	131.1	.2903	.01788	2391	14.02	.1370	7.80	92.83	43.48	63.20	.01099	.01224	5.494	.3955	.1820
7.38	.0001724	.002050	.08408	131.9	.2900	.01777	2391	13.94	.1368	7.79	92.88	43.48	63.38	.01092	.01217	5.495	.3955	.1820
7.39	.0001709	.002037	.08388	132.7	.2896	.01767	2391	13.85	.1366	7.78	92.92	43.49	63.55	.01086	.01210	5.497	.3954	.1819
7.40	.0001694	.002025	.08367	133.5	.2893	.01756	2392	13.77	.1364	7.77	92.97	43.49	63.72	.01080	.01202	5.498	.3954	.1819
7.41	.0001680	.002012	.08346	134.3	.2889	.01746	2392	13.69	.1362	7.76	93.02	43.50	63.89	.01073	.01195	5.499	.3953	.1818
7.42	.0001665	.002000	.08326	135.2	.2885	.01735	2392	13.61	.1360	7.75	93.07	43.51	64.07	.01067	.01188	5.500	.3953	.1818
7.43	.0001651	.001988	.08305	136.0	.2882	.01725	2393	13.53	.1358	7.73	93.11	43.51	64.24	.01060	.01181	5.502	.3952	.1818
7.44	.0001637	.001975	.08285	136.8	.2878	.01715	2393	13.45	.1356	7.72	93.16	43.52	64.41	.01054	.01174	5.503	.3952	.1817
7.45	.0001623	.001963	.08264	137.6	.2875	.01705	2393	13.37	.1355	7.71	93.21	43.52	64.59	.01048	.01167	5.504	.3951	.1817
7.46	.0001609	.001951	.08244	138.5	.2871	.01695	2393	13.29	.1353	7.70	93.25	43.53	64.76	.01042	.01160	5.505	.3951	.1816
7.47	.0001595	.001939	.08224	139.3	.2868	.01685	2394	13.21	.1351	7.69	93.30	43.53	64.93	.01036	.01153	5.507	.3950	.1816
7.48	.0001581	.001927	.08203	140.1	.2864	.01675	2394	13.13	.1349	7.68	93.35	43.54	65.11	.01029	.01146	5.508	.3950	.1816
7.49	.0001568	.001916	.08183	141.0	.2861	.01665	2394	13.06	.1347	7.67	93.39	43.54	65.28	.01023	.01140	5.509	.3950	.1815
7.50	.0001554	.001904	.08163	141.8	.2857	.01655	2394	12.98	.1345	7.66	93.44	43.55	65.46	.01017	.01133	5.510	.3949	.1815
7.51	.0001541	.001892	.08143	142.7	.2854	.01645	2395	12.90	.1344	7.65	93.49	43.55	65.63	.01011	.01126	5.511	.3949	.1814
7.52	.0001528	.001881	.08123	143.6	.2850	.01636	2395	12.83	.1342	7.64	93.53	43.56	65.81	.01005	.01120	5.513	.3948	.1814
7.53	.0001515	.001869	.08104	144.4	.2847	.01626	2395	12.75	.1340	7.63	93.58	43.56	65.98	.009996	.01113	5.514	.3948	.1814
7.54	.0001502	.001858	.08084	145.3	.2843	.01616	2395	12.68	.1338	7.62	93.62	43.57	66.16	.009937	.01106	5.515	.3947	.1813
7.55	.0001489	.001847	.08064	146.2	.2840	.01607	2396	12.60	.1336	7.61	93.67	43.57	66.34	.009879	.01100	5.516	.3947	.1813
7.56	.0001477	.001836	.08045	147.0	.2836	.01597	2396	12.53	.1334	7.60	93.72	43.58	66.51	.009821	.01093	5.517	.3946	.1812
7.57	.0001464	.001824	.08025	147.9	.2833	.01588	2396	12.45	.1333	7.59	93.76	43.59	66.69	.009764	.01087	5.518	.3946	.1812
7.58	.0001452	.001813	.08006	148.8	.2829	.01579	2396	12.38	.1331	7.58	93.81	43.59	66.87	.009707	.01081	5.520	.3946	.1812
7.59	.0001439	.001802	.07986	149.7	.2826	.01570	2397	12.31	.1329	7.57	93.85	43.60	67.04	.009650	.01074	5.521	.3945	.1811
7.60	.0001427	.001792	.07967	150.6	.2823	.01561	2397	12.24	.1327	7.56	93.90	43.60	67.22	.009594	.01068	5.522	.3945	.1811
7.61	.0001415	.001781	.07948	151.5	.2819	.01551	2397	12.17	.1326	7.55	93.94	43.61	67.40	.009538	.01062	5.523	.3944	.1811
7.62	.0001403	.001770	.07928	152.4	.2816	.01542	2397	12.10	.1324	7.54	93.99	43.61	67.58	.009483	.01056	5.524	.3944	.1810
7.63	.0001391	.001759	.07909	153.3	.2812	.01533	2398	12.03	.1322	7.53	94.03	43.62	67.77	.009428	.01049	5.525	.3943	.1810
7.64	.0001380	.001749	.07890	154.2	.2809	.01525	2398	11.96	.1320	7.52	94.08	43.62	67.93	.009373	.01043	5.527	.3943	.1809
7.65	.0001368	.001738	.07871	155.1	.2806	.01516	2398	11.89	.1319	7.51	94.12	43.63	68.11	.009319	.01037	5.528	.3943	.1809
7.66	.0001357	.001728	.07852	156.0	.2802	.01507	2398	11.82	.1317	7.50	94.17	43.63	68.29	.009265	.01031	5.529	.3942	.1809
7.67	.0001345	.001717	.07833	157.0	.2799	.01498	2399	11.75	.1315	7.49	94.21	43.64	68.47	.009211	.01025	5.530	.3942	.1808
7.68	.0001334	.001707	.07815	157.9	.2795	.01489	2399	11.68	.1313	7.48	94.26	43.64	68.65	.009158	.01019	5.531	.3941	.1808
7.69	.0001323	.001697	.07796	158.8	.2792	.01481	2399	11.61	.1312	7.47	94.30	43.65	68.83	.009105	.01013	5.532	.3941	.1808
7.70	.0001312	.001687	.07777	159.8	.2789	.01472	2399	11.55	.1310	7.46	94.34	43.65	69.01	.009053	.01008	5.533	.3941	.1807
7.71	.0001301	.001677	.07759	160.7	.2785	.01464	2400	11.48	.1308	7.45	94.39	43.66	69.18	.009000	.01002	5.534	.3940	.1807
7.72	.0001290	.001667	.07740	161.7	.2782	.01455	2400	11.41	.1306	7.44	94.43	43.66	69.36	.008949	.009959	5.536	.3940	.1806
7.73	.0001279	.001657	.07722	162.6	.2779	.01447	2400	11.35	.1305	7.43	94.48	43.67	69.55	.008897	.009902	5.537	.3939	.1806
7.74	.0001269	.001647	.07703	163.6	.2775	.01439	2400	11.28	.1303	7.42	94.52	43.67	69.73	.008846	.009845	5.538	.3939	.1806

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
7.75	0.0001298	0.001637	0.07685	164.5	0.2772	0.01430	2401	11.22	0.1301	7.41	94.56	43.68	69.91	0.008795	0.009788	5.539	0.3939	0.1805
7.76	.0001248	.001627	.07667	165.5	.2769	.01422	2401	11.15	.1299	7.40	94.61	43.68	70.09	.008745	.009732	5.540	.3938	.1805
7.77	.0001237	.001618	.07648	166.5	.2766	.01414	2401	11.09	.1298	7.39	94.65	43.69	70.27	.008695	.009676	5.541	.3938	.1805
7.78	.0001227	.001608	.07630	167.4	.2762	.01406	2401	11.03	.1296	7.38	94.69	43.69	70.45	.008645	.009620	5.542	.3937	.1804
7.79	.0001217	.001599	.07612	168.4	.2759	.01398	2402	10.96	.1294	7.38	94.74	43.69	70.63	.008596	.009565	5.543	.3937	.1804
7.80	.0001207	.001589	.07594	169.4	.2756	.01390	2402	10.90	.1293	7.37	94.78	43.70	70.81	.008547	.009510	5.544	.3937	.1804
7.81	.0001197	.001580	.07576	170.4	.2752	.01382	2402	10.84	.1291	7.36	94.82	43.70	71.00	.008498	.009456	5.545	.3936	.1803
7.82	.0001187	.001571	.07558	171.4	.2749	.01374	2402	10.78	.1289	7.35	94.87	43.71	71.18	.008449	.009402	5.547	.3936	.1803
7.83	.0001177	.001561	.07540	172.4	.2746	.01366	2402	10.72	.1288	7.34	94.91	43.71	71.36	.008401	.009348	5.548	.3935	.1803
7.84	.0001168	.001552	.07523	173.4	.2743	.01359	2403	10.65	.1286	7.33	94.95	43.72	71.54	.008354	.009295	5.549	.3935	.1802
7.85	.0001158	.001543	.07505	174.4	.2740	.01351	2403	10.59	.1284	7.32	95.00	43.72	71.73	.008306	.009242	5.550	.3935	.1802
7.86	.0001149	.001534	.07487	175.4	.2736	.01343	2403	10.53	.1283	7.31	95.04	43.73	71.91	.008259	.009189	5.551	.3934	.1802
7.87	.0001139	.001525	.07470	176.4	.2733	.01336	2403	10.47	.1281	7.30	95.08	43.73	72.09	.008212	.009137	5.552	.3934	.1801
7.88	.0001130	.001516	.07452	177.5	.2730	.01328	2404	10.41	.1279	7.29	95.12	43.74	72.28	.008166	.009085	5.553	.3933	.1801
7.89	.0001121	.001507	.07435	178.5	.2727	.01320	2404	10.36	.1278	7.28	95.17	43.74	72.46	.008119	.009033	5.554	.3933	.1801
7.90	.0001111	.001498	.07417	179.5	.2723	.01313	2404	10.30	.1276	7.27	95.21	43.75	72.65	.008074	.008982	5.555	.3933	.1800
7.91	.0001102	.001490	.07400	180.5	.2720	.01306	2404	10.24	.1274	7.26	95.25	43.75	72.83	.008028	.008931	5.556	.3932	.1800
7.92	.0001093	.001481	.07383	181.6	.2717	.01298	2405	10.18	.1273	7.25	95.29	43.76	73.01	.007983	.008880	5.557	.3932	.1800
7.93	.0001084	.001472	.07365	182.6	.2714	.01291	2405	10.12	.1271	7.24	95.33	43.76	73.20	.007938	.008830	5.558	.3932	.1799
7.94	.0001076	.001464	.07348	183.7	.2711	.01284	2405	10.07	.1270	7.24	95.38	43.76	73.38	.007893	.008780	5.559	.3931	.1799
7.95	.0001067	.001455	.07331	184.7	.2708	.01276	2405	10.01	.1268	7.23	95.42	43.77	73.57	.007849	.008731	5.560	.3931	.1799
7.96	.0001058	.001447	.07314	185.8	.2704	.01269	2405	9.953	.1266	7.22	95.46	43.77	73.76	.007805	.008682	5.561	.3930	.1798
7.97	.0001050	.001438	.07297	186.9	.2701	.01262	2406	9.897	.1265	7.21	95.50	43.78	73.94	.007761	.008633	5.562	.3930	.1798
7.98	.0001041	.001430	.07280	188.0	.2698	.01255	2406	9.842	.1263	7.20	95.54	43.78	74.13	.007717	.008584	5.563	.3930	.1798
7.99	.0001033	.001422	.07263	189.0	.2695	.01248	2406	9.786	.1261	7.19	95.58	43.79	74.31	.007674	.008536	5.564	.3929	.1797
8.00	.0001024	.001414	.07246	190.1	.2692	.01241	2406	9.732	.1260	7.18	95.62	43.79	74.50	.007631	.008488	5.565	.3929	.1797
8.01	.0001016	.001405	.07230	191.2	.2689	.01234	2407	9.677	.1258	7.17	95.67	43.80	74.69	.007588	.008440	5.566	.3929	.1797
8.02	.0001008	.001397	.07213	192.3	.2686	.01227	2407	9.623	.1257	7.16	95.71	43.80	74.87	.007546	.008393	5.567	.3928	.1796
8.03	.00009997	.001389	.07196	193.4	.2683	.01220	2407	9.569	.1255	7.15	95.75	43.80	75.06	.007504	.008346	5.568	.3928	.1796
8.04	.00009916	.001381	.07180	194.5	.2679	.01213	2407	9.516	.1254	7.14	95.79	43.81	75.25	.007462	.008299	5.569	.3927	.1796
8.05	.00009837	.001373	.07163	195.6	.2676	.01207	2407	9.463	.1252	7.14	95.83	43.81	75.44	.007420	.008253	5.570	.3927	.1795
8.06	.00009758	.001365	.07147	196.7	.2673	.01200	2408	9.410	.1250	7.13	95.87	43.82	75.62	.007379	.008207	5.571	.3927	.1795
8.07	.00009679	.001358	.07130	197.8	.2670	.01193	2408	9.358	.1249	7.12	95.91	43.82	75.81	.007338	.008161	5.572	.3926	.1795
8.08	.00009602	.001350	.07114	199.0	.2667	.01187	2408	9.306	.1247	7.11	95.95	43.83	76.00	.007297	.008115	5.573	.3926	.1794
8.09	.00009525	.001342	.07097	200.1	.2664	.01180	2408	9.254	.1246	7.10	95.99	43.83	76.19	.007257	.008070	5.574	.3926	.1794
8.10	.00009449	.001334	.07081	201.2	.2661	.01173	2408	9.203	.1244	7.09	96.03	43.83	76.38	.007217	.008025	5.575	.3925	.1794
8.11	.00009373	.001327	.07065	202.4	.2658	.01167	2409	9.152	.1243	7.08	96.07	43.84	76.57	.007177	.007981	5.576	.3925	.1793
8.12	.00009298	.001319	.07049	203.5	.2655	.01160	2409	9.101	.1241	7.07	96.11	43.84	76.76	.007137	.007937	5.577	.3925	.1793
8.13	.00009224	.001312	.07033	204.6	.2652	.01154	2409	9.051	.1239	7.07	96.15	43.85	76.95	.007098	.007893	5.578	.3924	.1793
8.14	.00009150	.001304	.07017	205.8	.2649	.01148	2409	9.001	.1238	7.06	96.19	43.85	77.14	.007058	.007849	5.579	.3924	.1792
8.15	.00009078	.001297	.07001	207.0	.2646	.01141	2409	8.951	.1236	7.05	96.23	43.86	77.33	.007019	.007805	5.580	.3924	.1792
8.16	.00009005	.001289	.06985	208.1	.2643	.01135	2410	8.901	.1235	7.04	96.27	43.86	77.52	.006981	.007762	5.581	.3923	.1792
8.17	.00008934	.001282	.06969	209.3	.2640	.01129	2410	8.852	.1233	7.03	96.31	43.86	77.71	.006942	.007719	5.582	.3923	.1792
8.18	.00008863	.001275	.06953	210.5	.2637	.01123	2410	8.804	.1232	7.02	96.35	43.87	77.90	.006904	.007677	5.583	.3923	.1791
8.19	.00008793	.001267	.06937	211.7	.2634	.01116	2410	8.755	.1230	7.01	96.39	43.87	78.09	.006866	.007634	5.584	.3922	.1791

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
8.20	0.00008723	0.001260	0.06921	212.8	0.2631	0.01110	2411	8.707	0.1229	7.00	96.43	43.88	78.28	0.006828	0.007592	5.585	0.3922	0.1791
8.21	.00008654	.001253	.06906	214.0	.2668	.01104	2411	8.659	.1227	7.00	96.47	43.88	78.47	.006791	.007551	5.586	.3921	.1790
8.22	.00008586	.001246	.06890	215.2	.2625	.01098	2411	8.612	.1226	6.99	96.51	43.88	78.66	.006754	.007509	5.587	.3921	.1790
8.23	.00008518	.001239	.06874	216.4	.2622	.01092	2411	8.565	.1224	6.98	96.55	43.89	78.86	.006717	.007468	5.588	.3921	.1790
8.24	.00008451	.001232	.06859	217.7	.2619	.01086	2411	8.518	.1223	6.97	96.59	43.89	79.05	.006680	.007427	5.588	.3920	.1789
8.25	.00008384	.001225	.06843	218.9	.2616	.01080	2412	8.471	.1221	6.96	96.63	43.90	79.24	.006644	.007386	5.589	.3920	.1789
8.26	.00008318	.001218	.06828	220.1	.2613	.01074	2412	8.425	.1220	6.95	96.66	43.90	79.43	.006607	.007346	5.590	.3920	.1789
8.27	.00008253	.001211	.06813	221.3	.2610	.01068	2412	8.379	.1218	6.95	96.70	43.90	79.63	.006571	.007306	5.591	.3919	.1789
8.28	.00008188	.001205	.06797	222.5	.2607	.01063	2412	8.333	.1217	6.94	96.74	43.91	79.82	.006536	.007266	5.592	.3919	.1788
8.29	.00008124	.001198	.06782	223.8	.2604	.01057	2412	8.288	.1215	6.93	96.78	43.91	80.01	.006500	.007226	5.593	.3919	.1788
8.30	.00008060	.001191	.06767	225.0	.2601	.01051	2413	8.243	.1214	6.92	96.82	43.92	80.21	.006465	.007187	5.594	.3918	.1788
8.31	.00007997	.001184	.06752	226.3	.2598	.01045	2413	8.198	.1212	6.91	96.86	43.92	80.40	.006430	.007147	5.595	.3918	.1787
8.32	.00007935	.001178	.06737	227.5	.2595	.01040	2413	8.154	.1211	6.90	96.90	43.92	80.59	.006395	.007109	5.596	.3918	.1787
8.33	.00007873	.001171	.06721	228.8	.2593	.01034	2413	8.109	.1209	6.89	96.93	43.93	80.79	.006360	.007070	5.597	.3917	.1787
8.34	.00007811	.001165	.06706	230.0	.2590	.01028	2413	8.065	.1208	6.89	96.97	43.93	80.98	.006326	.007031	5.598	.3917	.1786
8.35	.00007750	.001158	.06691	231.3	.2587	.01023	2413	8.022	.1206	6.88	97.01	43.94	81.18	.006291	.006993	5.599	.3917	.1786
8.36	.00007690	.001152	.06676	232.6	.2584	.01017	2414	7.978	.1205	6.87	97.05	43.94	81.37	.006257	.006955	5.599	.3917	.1786
8.37	.00007630	.001145	.06662	233.9	.2581	.01012	2414	7.935	.1203	6.86	97.09	43.94	81.57	.006224	.006918	5.600	.3916	.1786
8.38	.00007571	.001139	.06647	235.2	.2578	.01006	2414	7.892	.1202	6.85	97.12	43.95	81.76	.006190	.006880	5.601	.3916	.1785
8.39	.00007512	.001133	.06632	236.5	.2575	.01001	2414	7.850	.1200	6.85	97.16	43.95	81.96	.006157	.006843	5.602	.3916	.1785
8.40	.00007454	.001126	.06617	237.8	.2572	.009956	2414	7.807	.1199	6.84	97.20	43.95	82.15	.006123	.006806	5.603	.3915	.1785
8.41	.00007396	.001120	.06603	239.1	.2570	.009902	2415	7.765	.1198	6.83	97.24	43.96	82.35	.006091	.006769	5.604	.3915	.1784
8.42	.00007339	.001114	.06588	240.4	.2567	.009849	2415	7.724	.1196	6.82	97.28	43.96	82.55	.006058	.006733	5.605	.3915	.1784
8.43	.00007282	.001108	.06573	241.7	.2564	.009796	2415	7.682	.1195	6.81	97.31	43.97	82.74	.006025	.006697	5.606	.3914	.1784
8.44	.00007226	.001102	.06559	243.0	.2561	.009743	2415	7.641	.1193	6.80	97.35	43.97	82.94	.005993	.006661	5.606	.3914	.1784
8.45	.00007170	.001096	.06544	244.4	.2558	.009691	2415	7.600	.1192	6.80	97.39	43.97	83.14	.005961	.006625	5.607	.3914	.1783
8.46	.00007115	.001090	.06530	245.7	.2555	.009639	2416	7.559	.1190	6.79	97.42	43.98	83.33	.005929	.006589	5.608	.3913	.1783
8.47	.00007060	.001084	.06515	247.0	.2553	.009587	2416	7.519	.1189	6.78	97.46	43.98	83.53	.005897	.006554	5.609	.3913	.1783
8.48	.00007006	.001078	.06501	248.4	.2550	.009536	2416	7.479	.1188	6.77	97.50	43.99	83.73	.005866	.006519	5.610	.3913	.1783
8.49	.00006952	.001072	.06487	249.7	.2547	.009485	2416	7.439	.1186	6.76	97.54	43.99	83.93	.005834	.006484	5.611	.3912	.1782
8.50	.00006898	.001066	.06472	251.1	.2544	.009435	2416	7.399	.1185	6.76	97.57	43.99	84.13	.005803	.006449	5.612	.3912	.1782
8.51	.00006846	.001060	.06458	252.5	.2541	.009384	2416	7.359	.1183	6.75	97.61	44.00	84.32	.005772	.006415	5.613	.3912	.1782
8.52	.00006793	.001054	.06444	253.8	.2539	.009334	2417	7.320	.1182	6.74	97.65	44.00	84.52	.005742	.006380	5.613	.3911	.1781
8.53	.00006741	.001048	.06430	255.2	.2536	.009285	2417	7.281	.1180	6.73	97.68	44.00	84.72	.005711	.006346	5.614	.3911	.1781
8.54	.00006690	.001043	.06416	256.6	.2533	.009235	2417	7.243	.1179	6.72	97.72	44.01	84.92	.005681	.006313	5.615	.3911	.1781
8.55	.00006638	.001037	.06402	258.0	.2530	.009186	2417	7.204	.1178	6.72	97.76	44.01	85.12	.005651	.006279	5.616	.3911	.1781
8.56	.00006588	.001031	.06388	259.4	.2527	.009137	2417	7.166	.1176	6.71	97.79	44.01	85.32	.005621	.006246	5.617	.3910	.1780
8.57	.00006538	.001026	.06374	260.8	.2525	.009089	2418	7.128	.1175	6.70	97.83	44.02	85.52	.005591	.006212	5.618	.3910	.1780
8.58	.00006488	.001020	.06360	262.2	.2522	.009041	2418	7.090	.1173	6.69	97.86	44.02	85.72	.005561	.006179	5.618	.3910	.1780
8.59	.00006438	.001015	.06346	263.6	.2519	.008993	2418	7.053	.1172	6.69	97.90	44.03	85.92	.005532	.006147	5.619	.3909	.1780
8.60	.00006390	.001009	.06332	265.0	.2516	.008945	2418	7.015	.1171	6.68	97.94	44.03	86.12	.005503	.006114	5.620	.3909	.1779
8.61	.00006341	.001004	.06319	266.4	.2514	.008898	2418	6.978	.1169	6.67	97.97	44.03	86.32	.005474	.006082	5.621	.3909	.1779
8.62	.00006293	.0009981	.06305	267.9	.2511	.008851	2418	6.941	.1168	6.66	98.01	44.04	86.52	.005445	.006050	5.622	.3909	.1779
8.63	.00006245	.0009927	.06291	269.3	.2508	.008805	2419	6.905	.1167	6.65	98.04	44.04	86.72	.005416	.006018	5.623	.3908	.1779
8.64	.00006198	.0009873	.06277	270.8	.2505	.008758	2419	6.868	.1165	6.65	98.08	44.04	86.92	.005388	.005986	5.623	.3908	.1778

NACA

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
8.65	0.00006151	0.0009820	0.06264	272.2	0.2503	0.008712	2419	6.832	0.1164	6.64	98.12	44.05	87.13	0.005359	0.005954	5.624	0.3908	0.1778
8.66	.00006105	.0009767	.06250	273.7	.2500	.008666	2419	6.796	.1163	6.63	98.15	44.05	87.33	.005331	.005923	5.625	.3907	.1778
8.67	.00006059	.0009714	.06237	275.1	.2497	.008621	2419	6.761	.1161	6.62	98.19	44.05	87.53	.005303	.005892	5.626	.3907	.1778
8.68	.00006013	.0009662	.06223	276.6	.2495	.008576	2420	6.725	.1160	6.62	98.22	44.06	87.73	.005275	.005861	5.627	.3907	.1777
8.69	.00005968	.0009610	.06210	278.1	.2492	.008531	2420	6.690	.1158	6.61	98.26	44.06	87.94	.005248	.005830	5.627	.3906	.1777
8.70	.00005923	.0009558	.06197	279.6	.2489	.008486	2420	6.655	.1157	6.60	98.29	44.06	88.14	.005220	.005799	5.628	.3906	.1777
8.71	.00005878	.0009507	.06183	281.1	.2487	.008442	2420	6.620	.1156	6.59	98.33	44.07	88.34	.005193	.005769	5.629	.3906	.1777
8.72	.00005834	.0009456	.06170	282.6	.2484	.008397	2420	6.585	.1154	6.59	98.36	44.07	88.54	.005166	.005739	5.630	.3906	.1776
8.73	.00005790	.0009405	.06157	284.1	.2481	.008354	2420	6.551	.1153	6.58	98.40	44.07	88.75	.005139	.005709	5.631	.3905	.1776
8.74	.00005747	.0009355	.06143	285.6	.2479	.008310	2421	6.517	.1152	6.57	98.43	44.08	88.95	.005112	.005679	5.631	.3905	.1776
8.75	.00005704	.0009305	.06130	287.1	.2476	.008267	2421	6.483	.1150	6.56	98.47	44.08	89.16	.005085	.005649	5.632	.3905	.1776
8.76	.00005661	.0009255	.06117	288.6	.2473	.008224	2421	6.449	.1149	6.55	98.50	44.08	89.36	.005059	.005620	5.633	.3904	.1775
8.77	.00005619	.0009205	.06104	290.1	.2471	.008181	2421	6.416	.1148	6.55	98.54	44.09	89.57	.005033	.005590	5.634	.3904	.1775
8.78	.00005577	.0009156	.06091	291.7	.2468	.008138	2421	6.382	.1146	6.54	98.57	44.09	89.77	.005007	.005561	5.635	.3904	.1775
8.79	.00005536	.0009108	.06078	293.2	.2465	.008096	2421	6.349	.1145	6.53	98.61	44.09	89.97	.004981	.005532	5.635	.3904	.1775
8.80	.00005494	.0009059	.06065	294.8	.2463	.008054	2422	6.316	.1144	6.53	98.64	44.10	90.18	.004955	.005504	5.636	.3903	.1774
8.81	.00005453	.0009011	.06052	296.3	.2460	.008012	2422	6.283	.1142	6.52	98.68	44.10	90.39	.004929	.005475	5.637	.3903	.1774
8.82	.00005413	.0008963	.06039	297.9	.2457	.007971	2422	6.251	.1141	6.51	98.71	44.10	90.59	.004904	.005447	5.638	.3903	.1774
8.83	.00005373	.0008915	.06026	299.5	.2455	.007930	2422	6.219	.1140	6.50	98.75	44.11	90.80	.004878	.005418	5.638	.3903	.1774
8.84	.00005333	.0008868	.06014	301.0	.2452	.007889	2422	6.186	.1139	6.50	98.78	44.11	91.00	.004853	.005390	5.639	.3902	.1773
8.85	.00005293	.0008821	.06001	302.6	.2450	.007848	2422	6.154	.1137	6.49	98.81	44.11	91.21	.004828	.005362	5.640	.3902	.1773
8.86	.00005254	.0008774	.05988	304.2	.2447	.007807	2423	6.123	.1136	6.48	98.85	44.12	91.42	.004803	.005335	5.641	.3902	.1773
8.87	.00005215	.0008728	.05975	305.8	.2444	.007767	2423	6.091	.1135	6.47	98.88	44.12	91.62	.004778	.005307	5.641	.3901	.1773
8.88	.00005177	.0008682	.05963	307.4	.2442	.007727	2423	6.060	.1133	6.47	98.92	44.12	91.83	.004754	.005280	5.642	.3901	.1772
8.89	.00005139	.0008636	.05950	309.0	.2439	.007687	2423	6.029	.1132	6.46	98.95	44.13	92.04	.004729	.005253	5.643	.3901	.1772
8.90	.00005101	.0008590	.05938	310.6	.2437	.007648	2423	5.998	.1131	6.45	98.98	44.13	92.25	.004705	.005226	5.644	.3901	.1772
8.91	.00005063	.0008545	.05925	312.3	.2434	.007609	2423	5.967	.1129	6.44	99.02	44.13	92.45	.004681	.005199	5.645	.3900	.1772
8.92	.00005026	.0008500	.05913	313.9	.2432	.007569	2424	5.936	.1128	6.44	99.05	44.14	92.66	.004657	.005172	5.645	.3900	.1771
8.93	.00004989	.0008456	.05900	315.5	.2429	.007531	2424	5.906	.1127	6.43	99.08	44.14	92.87	.004633	.005145	5.646	.3900	.1771
8.94	.00004952	.0008411	.05888	317.2	.2426	.007492	2424	5.876	.1126	6.42	99.12	44.14	93.08	.004609	.005119	5.647	.3900	.1771
8.95	.00004916	.0008367	.05875	318.8	.2424	.007454	2424	5.845	.1124	6.42	99.15	44.15	93.29	.004586	.005093	5.647	.3899	.1771
8.96	.00004880	.0008323	.05863	320.5	.2421	.007416	2424	5.816	.1123	6.41	99.19	44.15	93.50	.004562	.005067	5.648	.3899	.1770
8.97	.00004844	.0008280	.05851	322.1	.2419	.007378	2424	5.786	.1122	6.40	99.22	44.15	93.70	.004539	.005041	5.649	.3899	.1770
8.98	.00004809	.0008236	.05838	323.8	.2416	.007340	2424	5.756	.1121	6.39	99.25	44.16	93.91	.004516	.005015	5.650	.3899	.1770
8.99	.00004773	.0008193	.05826	325.5	.2414	.007303	2425	5.727	.1119	6.39	99.29	44.16	94.12	.004493	.004989	5.650	.3898	.1770
9.00	.00004739	.0008150	.05814	327.2	.2411	.007266	2425	5.698	.1118	6.38	99.32	44.16	94.33	.004470	.004964	5.651	.3898	.1770
9.01	.00004704	.0008108	.05802	328.9	.2409	.007229	2425	5.669	.1117	6.37	99.35	44.16	94.54	.004447	.004939	5.652	.3898	.1769
9.02	.00004670	.0008066	.05790	330.6	.2406	.007192	2425	5.640	.1116	6.37	99.38	44.17	94.75	.004425	.004913	5.653	.3897	.1769
9.03	.00004636	.0008024	.05778	332.3	.2404	.007155	2425	5.611	.1114	6.36	99.42	44.17	94.96	.004402	.004888	5.653	.3897	.1769
9.04	.00004602	.0007982	.05766	334.0	.2401	.007119	2425	5.583	.1113	6.35	99.45	44.17	95.18	.004380	.004864	5.654	.3897	.1769
9.05	.00004569	.0007940	.05754	335.7	.2399	.007083	2426	5.555	.1112	6.34	99.48	44.18	95.39	.004358	.004839	5.655	.3897	.1768
9.06	.00004535	.0007899	.05742	337.5	.2396	.007047	2426	5.527	.1111	6.34	99.52	44.18	95.60	.004336	.004814	5.656	.3896	.1768
9.07	.00004503	.0007858	.05730	339.2	.2394	.007011	2426	5.499	.1109	6.33	99.55	44.18	95.81	.004314	.004790	5.656	.3896	.1768
9.08	.00004470	.0007818	.05718	340.9	.2391	.006976	2426	5.471	.1108	6.32	99.58	44.19	96.02	.004292	.004766	5.657	.3896	.1768
9.09	.00004438	.0007777	.05706	342.7	.2389	.006941	2426	5.443	.1107	6.32	99.61	44.19	96.23	.004270	.004742	5.658	.3896	.1768

TABLE II.- SUPERSONIC FLOW - Continued

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
9.10	0.00004405	0.0007737	0.05694	344.5	0.2386	0.006906	2426	5.416	0.1106	6.31	99.65	44.19	96.45	0.004249	0.004718	5.658	0.3895	0.1767
9.11	.00004374	.0007697	.05682	346.2	.2384	.006872	2426	5.388	.1104	6.30	99.69	44.20	96.66	.004227	.004694	5.659	.3895	.1767
9.12	.00004342	.0007657	.05671	348.0	.2381	.006836	2427	5.361	.1103	6.30	99.71	44.20	96.87	.004206	.004670	5.660	.3895	.1767
9.13	.00004311	.0007618	.05659	349.8	.2379	.006802	2427	5.334	.1102	6.29	99.74	44.20	97.08	.004185	.004646	5.660	.3895	.1767
9.14	.00004280	.0007578	.05647	351.6	.2376	.006768	2427	5.307	.1101	6.28	99.77	44.20	97.30	.004164	.004623	5.661	.3894	.1766
9.15	.00004249	.0007539	.05636	353.4	.2374	.006734	2427	5.281	.1099	6.27	99.81	44.21	97.51	.004143	.004600	5.662	.3894	.1766
9.16	.00004218	.0007501	.05624	355.2	.2371	.006700	2427	5.254	.1098	6.27	99.84	44.21	97.72	.004122	.004577	5.663	.3894	.1766
9.17	.00004188	.0007462	.05612	357.0	.2369	.006666	2427	5.228	.1097	6.26	99.87	44.21	97.94	.004102	.004554	5.663	.3894	.1766
9.18	.00004158	.0007424	.05601	358.8	.2367	.006633	2428	5.202	.1096	6.25	99.90	44.22	98.15	.004081	.004531	5.664	.3893	.1766
9.19	.00004128	.0007386	.05589	360.6	.2364	.006600	2428	5.176	.1095	6.25	99.93	44.22	98.37	.004061	.004508	5.665	.3893	.1765
9.20	.00004099	.0007348	.05578	362.5	.2362	.006567	2428	5.150	.1093	6.24	99.97	44.22	98.58	.004040	.004486	5.665	.3893	.1765
9.21	.00004069	.0007310	.05566	364.3	.2359	.006534	2428	5.124	.1092	6.23	100.0	44.23	98.79	.004020	.004463	5.666	.3893	.1765
9.22	.00004040	.0007273	.05555	366.2	.2357	.006501	2428	5.099	.1091	6.23	100.0	44.23	99.01	.004000	.004441	5.667	.3892	.1765
9.23	.00004011	.0007236	.05544	368.0	.2355	.006469	2428	5.073	.1090	6.22	100.1	44.23	99.23	.003980	.004419	5.667	.3892	.1764
9.24	.00003983	.0007199	.05532	369.9	.2352	.006437	2428	5.048	.1089	6.21	100.1	44.23	99.44	.003960	.004397	5.668	.3892	.1764
9.25	.00003954	.0007162	.05521	371.7	.2350	.006405	2429	5.023	.1087	6.21	100.1	44.24	99.66	.003941	.004375	5.669	.3892	.1764
9.26	.00003926	.0007126	.05510	373.6	.2347	.006373	2429	4.998	.1086	6.20	100.2	44.24	99.87	.003921	.004353	5.669	.3892	.1764
9.27	.00003898	.0007090	.05499	375.5	.2345	.006341	2429	4.973	.1085	6.19	100.2	44.24	100.1	.003902	.004331	5.670	.3891	.1764
9.28	.00003871	.0007054	.05487	377.4	.2343	.006310	2429	4.948	.1084	6.19	100.2	44.25	100.3	.003882	.004310	5.671	.3891	.1763
9.29	.00003843	.0007018	.05476	379.3	.2340	.006278	2429	4.924	.1083	6.18	100.3	44.25	100.5	.003863	.004288	5.671	.3891	.1763
9.30	.00003816	.0006982	.05465	381.2	.2338	.006247	2429	4.899	.1082	6.17	100.3	44.25	100.7	.003844	.004267	5.672	.3891	.1763
9.31	.00003789	.0006947	.05454	383.1	.2335	.006216	2429	4.875	.1080	6.17	100.3	44.25	101.0	.003825	.004246	5.673	.3890	.1763
9.32	.00003762	.0006912	.05443	385.1	.2333	.006186	2430	4.851	.1079	6.16	100.3	44.26	101.2	.003806	.004225	5.673	.3890	.1763
9.33	.00003735	.0006877	.05432	387.0	.2331	.006155	2430	4.827	.1078	6.15	100.4	44.26	101.4	.003787	.004204	5.674	.3890	.1762
9.34	.00003709	.0006842	.05421	389.0	.2328	.006125	2430	4.803	.1077	6.15	100.4	44.26	101.6	.003769	.004183	5.675	.3890	.1762
9.35	.00003683	.0006807	.05410	390.9	.2326	.006094	2430	4.779	.1076	6.14	100.4	44.27	101.8	.003750	.004162	5.675	.3889	.1762
9.36	.00003657	.0006773	.05399	392.9	.2324	.006064	2430	4.756	.1075	6.13	100.5	44.27	102.0	.003732	.004142	5.676	.3889	.1762
9.37	.00003631	.0006739	.05388	394.8	.2321	.006034	2430	4.732	.1073	6.13	100.5	44.27	102.3	.003713	.004121	5.677	.3889	.1762
9.38	.00003605	.0006705	.05377	396.8	.2319	.006005	2430	4.709	.1072	6.12	100.5	44.27	102.5	.003695	.004101	5.677	.3889	.1761
9.39	.00003580	.0006671	.05366	398.8	.2317	.005975	2431	4.686	.1071	6.11	100.6	44.28	102.7	.003677	.004081	5.678	.3888	.1761
9.40	.00003555	.0006638	.05356	400.8	.2314	.005946	2431	4.663	.1070	6.11	100.6	44.28	102.9	.003659	.004061	5.679	.3888	.1761
9.41	.00003530	.0006604	.05345	402.8	.2312	.005917	2431	4.640	.1069	6.10	100.6	44.28	103.1	.003641	.004041	5.679	.3888	.1761
9.42	.00003505	.0006571	.05334	404.8	.2310	.005888	2431	4.617	.1068	6.09	100.7	44.28	103.4	.003623	.004021	5.680	.3888	.1761
9.43	.00003481	.0006538	.05323	406.8	.2307	.005859	2431	4.595	.1066	6.09	100.7	44.29	103.6	.003605	.004001	5.681	.3888	.1760
9.44	.00003456	.0006506	.05313	408.8	.2305	.005830	2431	4.572	.1065	6.08	100.7	44.29	103.8	.003588	.003982	5.681	.3887	.1760
9.45	.00003432	.0006473	.05302	410.9	.2303	.005802	2431	4.550	.1064	6.07	100.7	44.29	104.0	.003570	.003962	5.682	.3887	.1760
9.46	.00003408	.0006441	.05291	412.9	.2300	.005773	2432	4.528	.1063	6.07	100.8	44.30	104.2	.003553	.003943	5.683	.3887	.1760
9.47	.00003384	.0006409	.05281	414.9	.2298	.005745	2432	4.506	.1062	6.06	100.8	44.30	104.5	.003535	.003924	5.683	.3887	.1760
9.48	.00003361	.0006377	.05270	417.0	.2296	.005717	2432	4.484	.1061	6.06	100.8	44.30	104.7	.003518	.003904	5.684	.3886	.1759
9.49	.00003337	.0006345	.05260	419.1	.2293	.005689	2432	4.462	.1060	6.05	100.9	44.30	104.9	.003501	.003885	5.684	.3886	.1759
9.50	.00003314	.0006313	.05249	421.1	.2291	.005662	2432	4.440	.1059	6.04	100.9	44.31	105.1	.003484	.003866	5.685	.3886	.1759
9.51	.00003291	.0006282	.05239	423.2	.2289	.005634	2432	4.419	.1057	6.04	100.9	44.31	105.3	.003467	.003848	5.686	.3886	.1759
9.52	.00003268	.0006251	.05228	425.3	.2287	.005607	2432	4.397	.1056	6.03	101.0	44.31	105.6	.003450	.003829	5.686	.3886	.1759
9.53	.00003246	.0006220	.05218	427.4	.2284	.005580	2432	4.376	.1055	6.02	101.0	44.31	105.8	.003433	.003810	5.687	.3885	.1758
9.54	.00003223	.0006189	.05208	429.5	.2282	.005553	2433	4.354	.1054	6.02	101.0	44.32	106.0	.003417	.003792	5.688	.3885	.1758

TABLE II.- SUPERSONIC FLOW - Concluded

M_1	$\frac{p_1}{p_o}$	$\frac{\rho_1}{\rho_o}$	$\frac{T_1}{T_o}$	$\frac{A_1}{A_{cr}}$	$\frac{a_1}{a_o}$	$\frac{q_1}{q_{cr}}$	V_1 (T_o=520°F abs.)	q_1 (p_o = 2121 lb/sq ft)	$\frac{1}{\sqrt{M_1^2-1}}$	μ	ν	δ_{max}	$\frac{p_2}{p_1}$	$\frac{p_2}{p_o}$	$\frac{p_3}{p_o}$	$\frac{\rho_2}{\rho_1}$	M_2	$\frac{V_2}{V_1}$
9.55	0.00003201	0.0006158	0.05197	431.6	0.2280	0.005286	2433	4.333	0.1059	6.01	101.0	44.32	106.2	0.003400	0.003773	5.688	0.3885	0.1758
9.56	.00003179	.0006128	.05187	433.7	.2278	.005299	2433	4.312	.1052	6.00	101.1	44.32	106.5	.003384	.003755	5.689	.3885	.1758
9.57	.00003157	.0006098	.05177	435.9	.2275	.005472	2433	4.292	.1051	6.00	101.1	44.32	106.7	.003367	.003737	5.689	.3884	.1758
9.58	.00003135	.0006067	.05167	438.0	.2273	.005446	2433	4.271	.1050	5.99	101.1	44.33	106.9	.003351	.003719	5.690	.3884	.1757
9.59	.00003113	.0006037	.05156	440.2	.2271	.005420	2433	4.250	.1048	5.99	101.2	44.33	107.1	.003335	.003701	5.691	.3884	.1757
9.60	.00003092	.0006008	.05146	442.3	.2269	.005393	2433	4.230	.1047	5.98	101.2	44.33	107.4	.003319	.003683	5.691	.3884	.1757
9.61	.00003070	.0005978	.05136	444.5	.2266	.005367	2434	4.209	.1046	5.97	101.2	44.33	107.6	.003303	.003665	5.692	.3884	.1757
9.62	.00003049	.0005949	.05126	446.7	.2264	.005342	2434	4.189	.1045	5.97	101.2	44.34	107.8	.003287	.003647	5.692	.3883	.1757
9.63	.00003028	.0005919	.05116	448.8	.2262	.005316	2434	4.169	.1044	5.96	101.3	44.34	108.0	.003271	.003630	5.693	.3883	.1757
9.64	.00003007	.0005890	.05106	451.0	.2260	.005290	2434	4.149	.1043	5.95	101.3	44.34	108.3	.003256	.003612	5.694	.3883	.1756
9.65	.00002987	.0005861	.05096	453.2	.2257	.005265	2434	4.129	.1042	5.95	101.3	44.34	108.5	.003240	.003595	5.694	.3883	.1756
9.66	.00002966	.0005833	.05086	455.4	.2255	.005240	2434	4.109	.1041	5.94	101.4	44.35	108.7	.003224	.003578	5.695	.3883	.1756
9.67	.00002946	.0005804	.05076	457.7	.2253	.005215	2434	4.089	.1040	5.94	101.4	44.35	108.9	.003209	.003560	5.695	.3882	.1756
9.68	.00002926	.0005776	.05066	459.9	.2251	.005190	2434	4.070	.1039	5.93	101.4	44.35	109.2	.003194	.003543	5.696	.3882	.1756
9.69	.00002906	.0005747	.05056	462.1	.2249	.005165	2435	4.050	.1038	5.92	101.4	44.35	109.4	.003178	.003526	5.697	.3882	.1755
9.70	.00002886	.0005719	.05046	464.4	.2246	.005140	2435	4.031	.1036	5.92	101.5	44.36	109.6	.003163	.003510	5.697	.3882	.1755
9.71	.00002866	.0005691	.05036	466.6	.2244	.005116	2435	4.012	.1035	5.91	101.5	44.36	109.8	.003148	.003493	5.698	.3882	.1755
9.72	.00002847	.0005664	.05026	468.9	.2242	.005091	2435	3.993	.1034	5.91	101.5	44.36	110.1	.003133	.003476	5.698	.3881	.1755
9.73	.00002827	.0005636	.05016	471.2	.2240	.005067	2435	3.974	.1033	5.90	101.6	44.36	110.3	.003118	.003459	5.699	.3881	.1755
9.74	.00002808	.0005609	.05007	473.4	.2238	.005043	2435	3.955	.1032	5.89	101.6	44.37	110.5	.003103	.003443	5.700	.3881	.1755
9.75	.00002789	.0005581	.04997	475.7	.2235	.005019	2435	3.936	.1031	5.89	101.6	44.37	110.7	.003089	.003427	5.700	.3881	.1754
9.76	.00002770	.0005554	.04987	478.0	.2233	.004995	2435	3.917	.1030	5.88	101.6	44.37	111.0	.003074	.003410	5.701	.3880	.1754
9.77	.00002751	.0005527	.04977	480.3	.2231	.004971	2436	3.898	.1029	5.87	101.7	44.37	111.2	.003059	.003394	5.701	.3880	.1754
9.78	.00002733	.0005501	.04968	482.6	.2229	.004947	2436	3.880	.1028	5.87	101.7	44.38	111.4	.003045	.003378	5.702	.3880	.1754
9.79	.00002714	.0005474	.04958	485.0	.2227	.004924	2436	3.862	.1027	5.86	101.7	44.38	111.7	.003030	.003362	5.703	.3880	.1754
9.80	.00002696	.0005447	.04949	487.3	.2225	.004901	2436	3.843	.1026	5.86	101.8	44.38	111.9	.003016	.003346	5.703	.3880	.1753
9.81	.00002677	.0005421	.04939	489.6	.2222	.004877	2436	3.825	.1025	5.85	101.8	44.38	112.1	.003002	.003330	5.704	.3879	.1753
9.82	.00002659	.0005395	.04929	492.0	.2220	.004854	2436	3.807	.1024	5.84	101.8	44.39	112.3	.002987	.003314	5.704	.3879	.1753
9.83	.00002641	.0005369	.04920	494.4	.2218	.004831	2436	3.789	.1023	5.84	101.8	44.39	112.6	.002973	.003298	5.705	.3879	.1753
9.84	.00002624	.0005343	.04910	496.7	.2216	.004809	2436	3.771	.1022	5.83	101.9	44.39	112.8	.002959	.003283	5.705	.3879	.1753
9.85	.00002606	.0005317	.04901	499.1	.2214	.004786	2437	3.753	.1021	5.83	101.9	44.39	113.0	.002945	.003267	5.706	.3879	.1753
9.86	.00002588	.0005292	.04891	501.5	.2212	.004763	2437	3.736	.1019	5.82	101.9	44.40	113.3	.002931	.003252	5.707	.3878	.1752
9.87	.00002571	.0005266	.04882	503.9	.2210	.004741	2437	3.718	.1018	5.82	102.0	44.40	113.5	.002918	.003237	5.707	.3878	.1752
9.88	.00002554	.0005241	.04873	506.3	.2207	.004719	2437	3.700	.1017	5.81	102.0	44.40	113.7	.002904	.003221	5.708	.3878	.1752
9.89	.00002537	.0005216	.04863	508.7	.2205	.004696	2437	3.683	.1016	5.80	102.0	44.40	113.9	.002890	.003206	5.708	.3878	.1752
9.90	.00002520	.0005191	.04854	511.2	.2203	.004674	2437	3.666	.1015	5.80	102.0	44.41	114.2	.002877	.003191	5.709	.3878	.1752
9.91	.00002503	.0005166	.04845	513.6	.2201	.004652	2437	3.649	.1014	5.79	102.1	44.41	114.4	.002863	.003176	5.709	.3877	.1752
9.92	.00002486	.0005141	.04835	516.0	.2199	.004631	2437	3.631	.1013	5.79	102.1	44.41	114.6	.002850	.003161	5.710	.3877	.1751
9.93	.00002469	.0005117	.04826	518.5	.2197	.004609	2437	3.614	.1012	5.78	102.1	44.41	114.9	.002836	.003146	5.710	.3877	.1751
9.94	.00002453	.0005092	.04817	521.0	.2195	.004587	2438	3.598	.1011	5.77	102.2	44.42	115.1	.002823	.003132	5.711	.3877	.1751
9.95	.00002436	.0005068	.04808	523.4	.2193	.004566	2438	3.581	.1010	5.77	102.2	44.42	115.3	.002810	.003117	5.712	.3877	.1751
9.96	.00002420	.0005044	.04798	525.9	.2191	.004545	2438	3.564	.1009	5.76	102.2	44.42	115.6	.002797	.003102	5.712	.3877	.1751
9.97	.00002404	.0005020	.04789	528.4	.2188	.004523	2438	3.547	.1008	5.76	102.2	44.42	115.8	.002784	.003088	5.713	.3876	.1751
9.98	.00002388	.0004996	.04780	530.9	.2186	.004502	2438	3.531	.1007	5.75	102.3	44.42	116.0	.002771	.003073	5.713	.3876	.1750
9.99	.00002372	.0004972	.04771	533.4	.2184	.004481	2438	3.514	.1006	5.74	102.3	44.43	116.3	.002758	.003059	5.714	.3876	.1750
10.00	.00002356	.0004948	.04762	535.9	.2182	.004460	2438	3.498	.1005	5.74	102.3	44.43	116.5	.002745	.003045	5.714	.3876	.1750

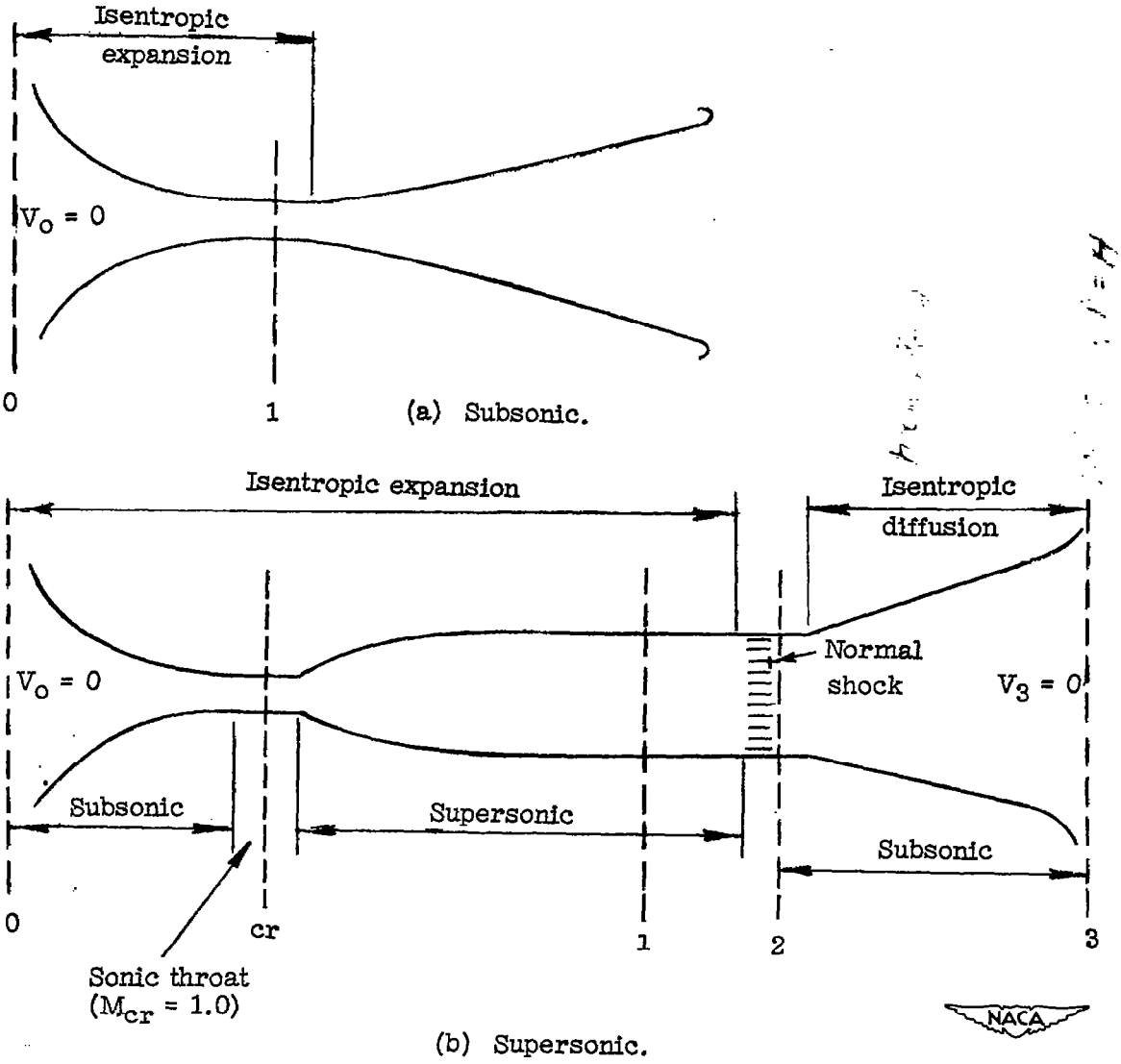

Figure 1.- Sketch showing stream-tube notation.

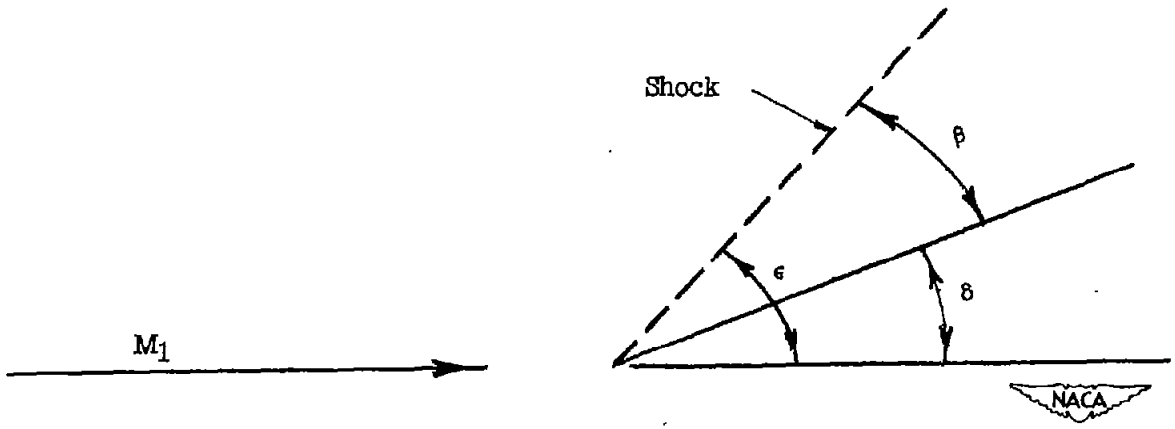

Figure 2.- Oblique-shock notation.

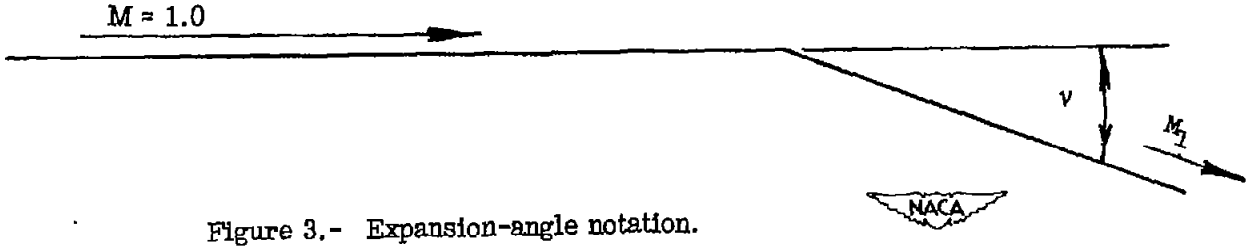

Figure 3.- Expansion-angle notation.